

DRAGON USER



The Independent Dragon magazine

January 1989

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Chris Gedge apologises for missing the monthly copy deadline while his computer was at the dentist's.

Editorial

Oh, dear, no, sorry, make that damn. What do I say now? I thought about standing under my desk and staying there, pretending that I never heard nothing till later, but as Bob has provided a formal statement about Dragon User's future (or lack of it — see page 15), I can't get away with that.

"Are you going to the Weston Show", I said to him on Thursday, uneasily because work was piling up and I didn't see getting there.

"I don't really feel like it at the moment", he said unexpectedly, and then explained that subscriptions had dropped sharply, and he couldn't see how we could continue beyond the current issue.

I don't have time to remove all the 'next month's' from the columns, but it looks as though Dragon User will die with this edition.

I am going to miss the old team. I won't serve this week. But I don't like thinking of Dragon resources wasted. Something may be worked out so that our material will be available from another source. Support your remaining editors — Paul Gade, Simon Jones, Andrew Hill, Donald Morrison. They are still The Great Who Do The Work.

Telephone number
(01) 870 8335

Editor
HELEN ARMSTRONG

Production Editor
HELEN ARMSTRONG/QUARTZ/ET

Administration/Advertising
BOB HARRIS

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How to submit articles

The quality of the material we can publish in Dragon User each month will, to a very great extent depend on the quality of the discoveries that you can make with your Dragon. The Dragon computer was furnished with the market with a powerful version of Basic, but with very poor documentation.

Articles which are submitted to Dragon User for publication should not be more than 5000 words long. All submissions should be typed. Please leave wide margins and a double space between each line. Programs should, whenever possible, be computer printed on plain white paper and be accompanied by a tape of the program.

We cannot guarantee to return every submitted article or program, so please keep a copy. If you want to have your program returned you must include a stamped addressed envelope.

Letters

This is your chance to air your views — send your tips, compliments and complaints to Letters.
Page, Dragon User, 48 Alexandra Road, Hounslow, Middle TW3 4JF.

Where is the OS9 group?

The Dragon disc drives and OS-9 system, which I purchased in March 1988, contains a series of OS-9 user discs brought by the previous owner.

Having read these and found them informative and interesting, I have tried since to join the OS-9 User Group, by telephone and letter, without any success. May I, through your columns, enquire as to how one contacts the group, bearing in mind that I have written and telephoned on numerous occasions the group address? I am particularly interested in acquiring back news discs from number 18 (July 89) onwards as there seemed to be a suggestion that an OS-9 tutorial was going to be produced and this, together with the programs and information contained on the discs, would seem to be excellent value for money as their subscription is only £10.

Can I wish to hear or up to date information about the OS-9 Users Group, someone, please? I have had two or three letters in recent months (which is two or three more than usual) from people who can't get a response from the Group. Martin Mervin was hard to get hold of in person at the best of times, which is his right and privilege as a hardworking organizer, but I wonder if the address has changed without many of us realising it?

Postscript

With reference to Brian Cadejo's answer to Adrian Orbit on the Postscript language, it would also like to add that Postscript printers can be connected to parallel ports. At least, mine does!

I have an AGT TurboUserPS with a Centronics port facility which can definitely be connected to the Dragon. The Postscript program is created by Brian Cadejo in Dragon Answers is in fact

Every month we will be shelling out a game or two, courtesy of our suppliers, to the readers who send the most interesting or entertaining letters. So send us your hints and your opinions, send us your hi-scores and suggestions. Send us your best Dragon stories. What if you think we are, mind readers?!



The Botto revealed

In the November issue of Dragon User you talk about the complimentary reference to the Dragon in an Atari magazine connection. You will find the quote on page 87 of the July 1989 issue of Atari ST User. The article, entitled 'A deconstructed Atari', referring, alas, to the ST rather than the Dragon — was written by Francis Botto (homely?), and it was after him that the 'botto' was named. A byline is, of course, an involuntary and inadvertent compliment paid by the supporter of one competitor to a competitor's product.

In an obvious attempt to

redress the balance, in the December issue of Atari ST User the same author disparaged the Dragon in the following words:

"Having a complete backup system (ie a hard disc) is perhaps beyond most of us, but it's worth keeping a computer or two you know that your ST has blown in the past (I, so long as it's nothing more than an inexpensive chip. For example, in the early days, Dragon computers tended to devour sound chips, and BBC models had a reputation for blowing TTL-SRAM data buffers."

Roger Wells, 37 Smeeth Court
Chesham Street, Brighton
BN1 1MG

Francis Botto... who does that naming job at? Well, this is a timely reminder that, just because the Atari is large

never and most expensive than our Dragon, it doesn't mean that it has better table manners.

wrong. The makefile operator is preceded by the transformation matrix in square brackets, and not the ordinary brackets as given in the listing. Otherwise, the Postscript interpreter will not print the desired result. Furthermore, the 'to mowels' statement will drive the old 'Dragon User' as well as the Atari paper. The correct listing of the Postscript program is in fact

(initials) findfont 100 0 144
0 0
makefont andfont
14 44 moveto
(DragonUser) show
showpage

If anyone in the Dragon world wants to know more about Postscript laser printers they can get in touch with me.

Sotek Mendelsohn

2 Kingshead Crescent
Rayford
Bucks RG12 9AX

PS I am enclosing two printer outputs of my TurboBasicPS. The first is the above program and the second a fancy printing of the same thing.

THANK you, Sotek. For the missing brackets, refer the reply about typesetting instructions, somewhere on this page. I wonder if we have them intact this time...

Elite locked

HELP! Help!

Can anybody help with Elite? When I use my pro-

gram and ask it to COPY or REPLICATE a cell it comes up with OPTIONS (X) and whatever I enter it looks up in anybody else out there get Elite? and does their program, do the same, or does anybody know what is the cause of the problem?

800 Main Road
Old Cooten
Northampton
NN5 6NA

PS Some time ago the OS-9 Group seemed to have disappeared. However, they suddenly reappeared and I as a new member received a disc in March 1988 and then another in June 1988. That is the last I heard from the group. Do you know anything about them?

YES, I remember the first great disappearance. Perhaps Martin intermittently just disappeared from the group and I as a new member received a disc in March 1988 and then another in June 1988. That is the last I heard from the group. Do you know anything about them?

Coco converter

LR2 masterCoco owners I have borrowed the fact that very little software available for the Dragon will also run on the CoCo, so I have decided to do something about it. I am willing to convert any Basic program and TRY to convert any machine code program, so that they will run on the CoCo.

Now, as most people know, the ROM routines in the Dragon's ROM have different addresses to their equivalents in the CoCo. With this in mind would be eternally grateful if some kind Dragon owner could disassemble the Dragon's ROM and send me a listing. Of course, I am willing to pay the postage and a reasonable fee for this service.

I have had a few recent successes in conventions, most notably Starship Software's Computer Companion, and

Destiny adventures. In addition I feel it only fair to point out that there are some machine code programs I have been unable to convert. For example, programs that add commands to BASIC, run windows, flash, write RQW files, etc. etc. etc. commands and Peter Winslow's QWRT.

All I ask for this service is the odd acknowledgement, something over the cost of printer paper, cassette, postage etc., and customers to realise that I can only do this in my spare time, so they will have to be patient and not expect a fully working and tested program a week after I have received it. Please enclose an assembly listing with all machine code programs. I regret that I cannot convert disc software.

Paul Weardon
30 Lime Ave
Bridley
Walsall
W Midlands
B82 9UP

Primesearch search party

IT would appear that several errors have crept into my Primesearch programs in the November issue of Dragon 138C.

Line 180 should read 180
A18 = ""

The 330 in line 660 should
read 300

Line 715 should read 715
PRINT "RMDFROM
PR765FOR 81,818

LINE 760 and 765 should
each be incremented by 10 to
insert an extra line which reads
760 GOTO 820 I deleted this in
error from the program thinking
it was superfluous, but it
was necessary after all.

I apologise for any brain
failure caused by the presence
of these errors but hope you
managed to sort them out
yourself. In passing, may I
stress that non-disc drive
users should not feel dismayed
on seeing the DOG commands
in the listings, as they may be
easily modified, but at the ex-
pense of being able to test a
much smaller range of
numbers. Many user-written
additions with any degree of
Primesearch, then send an
A4R to the address which helps you as
best I can.

Paul Weardon
Summerville, Alderley
Wotton-under-edge
Oxon. OX17 7DZ

And further

SIR: I wrote my letter to
your letters page about errors in
my Primesearch listing in
November 88, it has come to
my notice that there is a further
(perhaps?) error/omission.
Hopefully it is not too late to in-
clude the following in the list of
other errors in my letter. I would
be grateful if you would do this
for me. Thank you.

Yours faithfully,

Paul Weardon.

(Editor looks into envelope.
Nothing falls out. Editor
checks letter again. Nothing
but an expense of white paper
...)

MOST letter

Dear Helen,

I forgot to write what the om-
issions were in my other let-
ter today. Sorry I forgot it in my
haste.

The omission was:

880 r(1) = 0

My apologies again

Yours sincerely

David Weardon (son)

(Thank you for sorting out the
old man, David. As this is all
written in beautiful Gothic
script, it is a little difficult to be
sure of the exact correction, as the
Gothic apparently did not
have a symbol for = or 0. Let us
check the original - and save
either when star click clug
clug when read listed below
- and late, it already been
aged, I don't normally ex-
pect things of I've checked them,
but that doesn't mean that the
typesetter's translation pro-
gram wasn't doing something
without me noticing, it does
happen, see Harvey Gray's let-
ter elsewhere on this page. On
the other hand, I can't see
anything in "560 r(1) = 0"
which the machine would later
over, and there are one or two
points which dear delectable
evidence of having been, as
shall we say, misread. Send
me nice warm feelings with no
smudges, Paul, and I won't
have to retype him, shall I?

I ink this is alright

ITS a bit late to be answering
the query, but yes, I have used

the spinning services of Amstrad
of Portsmouth (see Dragon User
September 1988). The
rental was good, the price
reasonable. Of two ribbons
rented so far, one has come
back as good as new, the other
smudged a little initially, but
settled down after a few days. I
would have no qualms about
recommending them.

Malcolm Cowen
2103 Bristol Road
Levenshulme
Manchester M19 2NU

No indeed, your letter comes
shy after R A Davies' tale of
disaster in his review. The suc-
cess of this operation depends
to some extent on the type of
ribbons, and using a more rib-
bon-rich and less expensive one
are only made worse by re-
sisting. I wrote off a manual
typewriter like that, once, he
warned, not even. By the way,
you don't know what the DS-2
User Group is up to these days,
do you?

For Pete's sake, Paul

NO, I haven't forgotten to in-
clude the disc, it shall be send-
ing the next lot of copy to you
in plenty of time for your
January issue deadline (Ac-
tually, it arrived on the final copy
date, but can Pete send his stuff
in on a disc which I can digest
directly, and as the two days
before his birthday, and as I'm
running late anyway, no
redishes for Pete.) but having
just received and read bits of
the October issue, the brain
was diverted away from
perigues and other palatable
puzzles just long enough to
write this letter.

What prompted finger to
keyboard was Paul Gade's
column. The phrase "Man,
Amstrad, Commodore etc are
all selling mediocre products
to willing buyers" was the one
that did it. I regularly use com-
puters manufactured by all
three, none of which I would
regard as being mediocre pro-
ducts. Nor do I think that I'm
a willing buyer for putting with my
money.

I use an Amstrad PCW
primarily for word processing,

and it helps some magazines
(including this one) considerably
that I choose to do so. I
thought it for just that purpose,
and unless than 14000 in one,
it represents a great bargain.
Apart from magazines, I can
easily maintain a healthy cor-
respondence with friends up
and down the country, which I
would be less inclined to do if
I didn't have a PCW.

A Commodore 64 might be a
good enough machine, but that's
not the point. I also do quite
a lot of programming on it. It
is now entering its seventh
year, and is still a great com-
puter for its price.

An Atari 1040S belongs to a
friend of mine, and that gets use
by me about once a week for
shared development work on
games. Again, for the price, it is
a marvelous computer, it most
certainly is NOT a mediocre pro-
duct, and I would like to hear
Paul Gade's shoes were he to
call my friend a willing buyer
within a month. Filled by a
single glance, most likely.

Then there is the Dragon,
which I use for playing adventures.
Although computers, either
one may have a job to do and
it will, total cost to me, in real
terms, is around a thousand
pounds spread over two years of
ownership in sunny Wigan. In
other words, about the price of
a packet of twenty cigarettes a
day, or two pints of beer at our
northern prices.

So please don't turn Dragon
User into a forum for one of
these meaningless debates on
which computer is best. The
best computer is the one that
you are making good use of at
the time, and let that be the end
of it.

PSIT would be a great help to
me if you could get any pre-
release adventures, and could
incorporate everything into one
big column, creating a little
adventure fanzine within the
columns of Dragon User.

Pete Gerard
Surrey Wigan

WELL, I think Pete and I
would be accepted from
magazines entirely on the
grounds that they are putting
their computers to constructive
use. The mag is, after all, the
one who is doing a bit of
hardware thinking, why won't
this do what I want? I agree
about the PCW. If I had more
space on my disk I'd have one
here, and just use it for sending
out instant letters at the mo-
ment I think of them. No more,
why don't you write us, Helen?

Dragonfire still stoking

LATEST price list updates from Dragonfire Services: new programs *Aladdin*, tape £13, *Space* (two 1.2 5. Diskette Machine), *Mini-Machine Search*, and *The Imperial Grain*, tape and disk, £4 each, *Dragonfire* and *Kids Pack*, now on disc £2, *Samurai* (Disk), *Diamond Manor* now on disc, £3 each. All prices plus 50p per item p&h (UK), £1.25 per item overseas.

New *IntelligentCrisp Copier*. A simple but ingenious utility that backs up the entire disc (like using a backup command), including the 'hidden' boot routines, etc.) in the maximum number of disc swaps.

Designed for single drive users, but will save time on multi-drive copies too. Free copies of *Bootstrap* (auto boot) and *Hellra* (prepared screen display) on the disc as well. £2.

Dragonfire will arrange a post office special delivery service over Christmas for an extra £1.75 on the price of a whole order. Regrettably this column is unlikely to reach you before Christmas, but no doubt if it is a success Dragonfire will consider continuing the service.

Dragonfire Services, 10 Perry Jones Close, Baines, Great NP3 2HJ.

Visitext plus, plus

Visitext Plus by Orange Software has been upgraded with better facilities for adding and deleting text, and block moves. Copy can also be laid out in more than one column per page, in magazine style, with the wordwrap and justification working within the columns. Orange Software are expected to offer an upgrade service to existing users.

Orange Software, The Girth, Old Road, Haverhill, Haverhill, Great NP3 3DP.

From Ken G. Smith

Repair man back

Mr Spens has announced to Dragon User that, "Finally, after 13 months!" he has succeeded in moving house, and is now back in business selling spare parts for the Dragon, and undertaking repairs.

His classified ad (page 27) mentions "transformers, SMAs, MPUs and many other items, repairs and upgrades." For a pricebook list, send an SAE to Mr Spens at 20 Eaton Way, Great Totham, Essex CM9 8EE.

Update to date

OCTOBER's issue of *Dragon Update* features a page on *Sprite Magic*, a feature on *Logo*, two or three short programs, numerous correspondence regarding the Dragon and the Atari ST, a review of the *PCW* *Wides* (scores of Bob Probert doing business and the throng), several short games reviews by Mike Scott, a user note on *Copy Plus 4* from Philip Scott, and the usual couple of pages from Paul, among other things including us all to support the showstop that *WOLU* closed/ceased and/or are next year. This is *Update's* 50th issue, but wasn't quite the celebratory edition Paul had hoped for due to that old favourite the postal strike - cancelled Crossroads and so forth. And the Editor would like some more articles, National Dragon Users Group, c/o Paul Grade, 4 Navarino Road, Worthing, Sussex.

No connection

SMITH Jones would like it known that his *New Era Publications* and Software company has no connection either with Harry Whitehouse's erstwhile *New Era Interface*, nor with *Nerfline*, publishers of science-fiction books.

Lee conquers USA

GORDON Lee has had a good response from readers of *Scientific American* to his *Primegrid* puzzle, and we hope to publish an upgraded puzzle resulting from that correspondence in next month's issue.

Ethnologist finds new DOS bag

PHILIP Scott has written to us with a bug report on a fault in *DragonDOS 1.0 SuperDOS* and versions to *DOCPUS* to 4.8. "I have not seen a previous report of this fault, and Paul Grade has not heard of it," writes Philip. "Nor have I," says Bob Harris. Philip blames the bug for corrupting calculations and disc directory tracks.

"It has been found recently that programs performing intensive disc output can corrupt normal calculations or (worse) *SPREAD* and *SWRITE* to access the wrong disc sector. These errors can be both transient for example, corrupting output from *PKMT* and permanent and are difficult to

effectively demonstrate or detect.

It is perhaps worth noting that *SPREAD* and *SWRITE* usually access track 20 (the directory track) when the problem occurs. It is possible to overcome the problem by adding program statements, but each program generally needs a different approach, and the effectiveness of the process can vary from run to run. *DOCPUS* owners who have not been contacted should request exchange details for replacement by *DOCPUS 4.7*."

Philip G. Scott, 4 Badgewood Drive, Friesley, Camberley Surrey GU10 5UP.
Can anybody shed any light on this?

Radiation maiden



THE young lady in the pic is testing an overall designed to protect pregnant women from the possibility of miscarriage due to radiation from VDUs.

Although experts still disagree on whether RF radiation from VDUs (or televisions) can disrupt the growth of embryos in the first weeks of pregnancy, research figures indicate that women working more than 20 hours a week at VDUs are more prone to miscarriage than those doing non-VDU work. A garment like this blocks up to 90% of radiation from most VDUs.

The Microshield overall, shown here, costs £52 plus VAT and is available from computer dealers or from Mediashield marketing, PO Box 95, Binsworth, Hants RG16 7YH.

Second-saver for a fine tuned Dragon system

Program: Express/OS-9.
Equipment needed: Dragon 54 with the DragonPlus (not essential).
Supplier: Compuserve Ltd, Millingbury Lane, London NW2 6SP. (Seeback cover monthly ad.)
Price: £1995.

A fair number of Dragon 54 owners have upgraded using the Compuserve DragonPlus (not essential), the nearest thing to a 128K Dragon which exists. I suspect this was mainly to get the very clear 80 column display, which is a great improvement when using serious software. Another bonus is the extra 64K of memory which cannot, however, be accessed directly from Basic. A recent issue of OZ reviewed the DOS+ program, and Compuserve produced a special version of this which uses the 80-column display and can access the extra memory using a new **POKE** command. Apart from problems which appeared with the **MAKEVS** command using this program, **POKEing** is hardly an ideal way to use an extra 64K of memory.

A much better solution was to use the 64K as a random access buffer with either Flex or COS-9. The extra 64K of memory is first formatted just like a hard disc, and then the user copies the most often used commands from their system to the random access buffer. Remember that Flex and COS-9 use almost the full 64K of the Dragon 54 for the programs they run, and any operating commands such as format, copy and GPR are normally picked up again from the disc in drive 0 as required. This saves a lot of memory, since the normal Dragon Basic together with DragonDOS takes about 19K, permanently away from the maximum of 64K which can be addressed by the 6805 chip. However, it does slow down the operation considerably, and uses the disc drives a lot more. When I first changed from my buffered tape recorder to spin new Commodore disks I marvelled at the almost instantaneous loading of programs and files. Now I resent the few seconds it takes for COS-9 commands to load. Main (and

Woman, madame Editor) is never satisfied - this, I suppose, leads to Progress.

The random access buffer available from Compuserve and others allowed the commands to be on hand almost instantaneously, providing you had first copied them into the random access buffer. A special startup file can enable this to be done automatically when **BOOTing** up, but this prolongs the searching around on the system disc, during **BOOT** for at least a further minute, which can be annoying if you only want to use one of the commands. Also, **Disk's Law** takes a hand - the command you want to use is the only one not copied to random access.

More clever

The new Express/OS-9 is a much cleverer answer. It uses an advanced cache buffering technique 'only used on large and expensive mainframes', is quite Compuserve. The idea is to keep automatically any command or program you use in a buffer which saves the extra DragonPlus memory so if you use it again later it will load instantly. Thus, the first time you load the word processor **Styleit** will take the normal loading time (a little less, actually, for reasons I will divulge but if you return to **Styleit** later it loads from the buffer in less than half the time. This assumes you have not used so many other commands in between that you have exhausted the buffer memory of 64K. Not only is there a time saving, but wear and tear on the disc is much reduced. Another clever feature is an option which enables you to store the disc directory track in the buffer. Since this is always accessed before any disc read or write, and often several times during the transfer of large files, much time and frothing of the disc heads can be avoided, which is why even on first load the access is quicker.

Now, is it worth buying a utility to save a few seconds, and

are there any traps? Compuserve claim that using the C compiler for a short program they took 180 seconds as compared to the normal 372 seconds, and the C compiler is too large for it all to fit in the cache at once, so this is not a 'best case'. If you are frequently using programs this saving certainly seems worthwhile. The three main advantages seem to be that a little of your memory is permanently used by a module called **XPR**, that you have to initialise by both loading **XPR** and by calling a larger command called **XP** and that the idea of totting the directory in memory can be dangerous to your disc's health! Imagine what would happen if you changed discs and then tried to do a write on the new one using the filename of the old one! (I don't have to David. My Apricot will do something fairly horrendous, no problem, if you change discs without clearing the memory first. The **Amstrad PCW** (Locosoft) won't let you do that - it performs a **Disk Change** automatically. But it's a slow little chip, too.)

Compuserve have addressed the last problem by offering a number of safeguards. Using the command **XPR** when changing discs clears the buffer (but what if you forget?). The command **XP -HARD** will stop any writes according to the specified drive 00 so the worst that can happen is that you get some funny results after changing discs. This command is recommended for the drive which contains your system disc if you have at least two drives. However, you will probably want to save quite frequently on your data disc, so this is not an option for the other drive.

Logic check

The command **XP C** tells Express/OS-9 to check logical sector zero of the disc each time. This tells COS-9 if the disc has been changed, and if this is detected the directory cache will be rewritten. However, this means the drive always wait-

ries on at each command, and some of the time saving is lost. Also, to guard against two discs having the same name, it is recommended that the supplied utility **CLIP** is used to initialise each of your discs using the system clock. **CLIP** uses the last six bytes on disc for zero which are otherwise erased by COS-9. This means each disc (even a backup) is unique. Sector zero checking is the default, which is switched off using the command **XP -C**.

The **XP** command has other alternatives. The parameter **I** initialises Express/OS-9 while **X** cancels it. **Atb** deactivates drive 0 while **Atb** reactivates it. **S** displays the status of each drive and **d** displays the performance as far as this is an interesting one, as it tells you how many disc accesses have been made and what percentage have been saved by Express. The counters are then reset, but a similar command **SP** does not reset them. There is a useful **HELP** command obtainable by **XP 7** or **XP H**. Both give a list of parameters and their uses.

The disc supplied contains, besides **XPR**, **CLIP** and a sample **STARTUP**. This **XP** must be copied into your command directory and you can do the same with **XPR**, loading it before calling **XP**, or include it in your boot file using **COAGEN**. The startup file does the usual things but also gets you into 80 columns, loads **XPR** and then calls **XP** with a number of parameters. These initialise Express without sector checking and enable write protect on drive 0, make drive 1 a read/write drive with sector zero checking and enable Express on drives 2 and 3. Finally drive 0 is displayed. A 20 page A4 instruction leaflet gives clear information apart from a few obvious mistakes.

Since Express is not compatible with use of the random access buffer, there is a warning message on loading **XPR** if the random access buffers are present in memory. This only works for the Compuserve ones - if you have the 80 driver (which has the ad-

venance of working with the same **FORMAT** command as discs) no warning is given. **Format** also appears to first device **HD** and **CD** in memory and gives an error if they are not found. This doesn't seem to affect its use, however, apart from the status command 'Y' which gives rubbish on the lines which would report on drives **D** and **C**.

So much for the theory, what about **Express** in practice? My misadventure refused to load the **XP** module, giving a **CRG** error. This would, of course, have been due to some things which the **CRG** code delight in doing to our packages, and I only mention it to highlight the fact that a phone call to Computerwise resulted in a replacement by return of post. This worked perfectly, doing everything the instruction booklet said it would, with one exception: the write protection disc indeed gave a 'write protect' error number 242 when you try to delete a file on a protected disc. However, when you try to use the **COPY** commands write-on that drive you get an error 218 'system error in pathset', but a serious problem, but it could cause some head scratching! I then set out to see what file - advantage was to be gained using my new Mitsubishi 80 track double sided drives.

while compiling both Pascal and C programs. If you usually make a coffee while waiting for the compilation, then this won't grab you as very important, but if (like me) you tend to write programs with errors in them and have to recompile several times to find them, then the time saving is useful.

A very noticeable effect was the reduced head movement of the drives while loading programs and indeed a frequent loading of commands without the drive light coming on at all. This is much quieter and must lead, as claimed, to less wear on the drives and discs. If, like me, you have 80 track or double sided drives, or both, then you can have all your commands and programs on one system disc. In this case use the **-W** and **-C** commands on drive **C**, and don't remove this disc. It is probably safer not to use the **C** option on drive **I** as you will be reading and writing data so you cannot use the **AW** to safeguard your disc. I am against **autohigh** - some disc file system and wait files for numerous reasons, each one small in itself but adding up to fast files and other inconveniences over a period of time. **CD** **HD** I had only 40 track single sided I don't think I would use the **-C** option at all, since the danger of forgetting to do an **XP** when changing discs far

ing, if you normally boot up straight into **Stylograph** or **Dynasoft**, and stay within it till you save your final file, then the extra time and memory taken in loading **Express** is probably not worthwhile. In any case, **Computerwise** are to be congratulated on an imaginative and welcome addition to the **OS-6** armoury, and so deserve five dragons for what must be the most useful software addition for some time. It also makes the **DragonPlus** board an even more attractive add-on for the **Dragon**.

David Rothery



New games new faces

Title: **Manchegore**
Supplier: Kauga Software, 94 The Oval, Fifth Park, Sheffield
Price: £4.95

MANCHEGORE is a new arcade type game from a new software house, which just about synthesises the metamorphosis of the **Dragon** market recently. **Score** are the old standards like **Microcosm** and **Quickbeam** to be replaced by new producers such as

each composed of five floors, a floor being like a level in **Kung Fu**, where you progress either in an Eastern or Western direction while the screen scrolls in the appropriate fashion.

As for the game's objective, that seems to be to avoid hazards or to shoot them and not only that but to get to the end of level 2 with one your precious lives intact! I don't know what happens then, as it's a difficult game. The first floor is relatively easy; you move up and down the pyramidal lanes shooting mutant adversaries portrayed in excellent graphics and which transform into equally impressive skeletons once shot. Although once dead they can no longer spit venom at you, to teach them is still deadly unfortunately. Other objects on the first floor include a fairly large mummy which fires the odd bullet and small pyramids on the floor which block your way.

In fact there is no aspect of the graphics I can criticise. Once the first floor is completed other well drawn objects and creatures appear, such as swooping eagles and ants which fire relentlessly at you. All this is portrayed in three green-black, which I always think is less visually effective than the **Dragon**'s only other real option, black-buff, but is perhaps less often on the eyes.

Joysticks are in action again here, with traditional **Dragon** sticks being more effective than the Atari variants, as small taps on the stick are needed for up-down movements rather than big langes.

With **Manchegore** and **Lord's Kingdom** being the last two new **Dragon** programs I've looked at I can safely say that quality software isn't drying up. **Manchegore** is one of the best graphic games I have seen for the **Dragon**; it's quite fun to lose a life to see yourself fall into a pile of snakes while your cap spins round in the air before falling to earth. The only problem is that I don't find it the most addictive game I've ever played - not quite as addictive as say **Lochlin's Kingdom**, but any program as well written can only deserve the accolade of five **Dragons**.

Philip Stott



Timings using Mitsubishi 80-track drives

DR. UNLOCKED	FILED. XP	FILED. XP using -C option
First time	Subsequent	Subsequent
Load Stylograph	12s	12s
Load Dynasoft	18s	11s
Compile short C program (average)	4 min 4s	4 min 12s
Compile longer C program (green)	14 min 4s	7 min 42s
Compile short Pascal program (red)	3 min 18s	3 min 48s

Last times for **Stylograph** and **Dynasoft** are increased by 1 sec if **-C** option is not used.

Compensate say that their **Dragon Data** drives rack 10' secs to load **Stylograph**, and that this was reduced to 12' secs for the first load and 8' seconds for subsequent loadings. Well, we won't argue over one second for the first loading. It is evident that the original **Dragon** drives were slower than mine so that the potential benefits are greater. Even so, my loading times were halved and there was a very substantial time saving

outweighs the one second time advantage.

Is it worth the £17 price tag? Is it, like me, you get your **OS-6** stuff at the half-off prices from John Peers then paying almost as much for a speed-up command as for a C compiler seems expensive, but if you consider the original **Dragon Data** prices for **OS-6**, it seems cheap. And remember that **Dragon Data** prices were much cheaper than comparable software for other computers ... If you do a lot of compiling, cruise the system commands a lot, then it has got to be worth buy-

Dragon, **Change** and in this case **Kuga**.

With 'give' tucked away in the title it would appear that this would be a short everything game. Not quite the case, as you play a more tactical role. 'You' in this instance are **Manchegore**, an excitable robot sniffing about in an Egyptian pyramid. Unfortunately for you, a complex defence system is set off, with all kinds of creatures and objects lurking and looting with intent.

To complete the game you have to conquer two levels

Wordsearch

Please get your answers to Dragon User Wordsearch Department by the end of the month on the front cover

WELCOME to the first Dragon Wordsearch! Now that the Thirteenth Greenword is slain to ruins, it has found a worthy successor. All you have to do is find the word currencies - laterals the left - hidden in the Wordsearch grid. The letters remaining when all have been located will spell out, when re-arranged, the name of a Dragon software title. Clue: END OF ENGAGEMENT? (12,3,4).

And what of the fourth Dragon Crossword, still waiting to be solved? It reports back to us, appearing under the weight of its followers.

"We have here Richard Crafts of Wilington, who would like anything 30 or indeed almost anything else, and A. Carlson of RMU Wittering, who fancies a round of backgammon.

The phrase is DISC INTERFACE.

Send your answers to the First Dragon Wordsearch to Dragon User. The first correct answers out of the Editor's hat win something from the Magic Bottomless Box. By telling us what you're like - you might be lucky.



Find the world currencies hidden in the grid.

FRANC
GREAT
KIPPEK
KRONA
KROSEKRON
LEU
MARK
RIL
PESETA
PESO
PFENNIG
PLASTINE
POUND
RUPEE
SHEKEL
SKILLING
YEN
ZLOTY

BOLIVAR
CENT
CENTAVO
CENTIME

DEUTSCHMARK
DINAR
DIRHAM
DOLLAR

DRACHMA
ESCUDO
FERI
FORINT

Screening the Dragon

Radio amateur N J Cleaver lowers the noise threshold

The following information may be of some use to users of the Dragon, particularly radio amateurs, of which I am one.

I use the Dragon with a single disc drive and monitor together with a Texas PT-2THF transceiver to transmit and receive radio teleprinter (RTTY) software supplied by Greenview Software.

As a lot of readers will probably know, the Dragon does tend to generate a rather a lot of radio interference which can cause havoc when trying to receive weak RTTY. In my case this was no exception.

I have tried various methods to eliminate this interference, for example, the use of screened leads to every piece of equipment, and the physical repositioning of computer/monitor and radio. This had some marginal success, but was still plagued by the interference directly radiated from the Dragon.

Having read articles about screening the inside of the computer, I decided that I would set about spraying the inside of the computer case with a conductive vapour screening spray.

The Dragon case comes

apart very easily by the removal of the four screws located underneath the case. Next the printed circuit boards are released by the removal of the screws at each corner of the boards. There are two ribbon cables, one connecting the keyboard to the main circuit board and one connecting the power supply/video modulator board to the main circuit board. Once the screws are removed all three boards can be lifted out of the case.

Next, the inside of the upper and lower parts of the case must be thoroughly cleaned. I used washing up liquid and in no time the inside of both parts was spotless. After a short period of time I allow the case to dry, all the subunits in the lower half of the case were covered over with tape to prevent overspray. A complete wash out to the shape of the keyboard cutout and fixed into place. The final thing to do before spraying is to solder a small length of wire to a small square of Veroboard and to stick the Veroboard to the inside of the case above the position of the power supply board. This will enable earthing of the

inside of the case after the spraying has been completed.

The actual spraying part is the easiest and only took a couple of minutes. To prevent overspray I used a large piece of old card held against the edges of the case. The Veroboard (but not the wire) must be sprayed over too. The whole spray dies in about ten to fifteen minutes.

When reconstructing the Dragon you must ensure that only 0.1 (ie earth) parts of the circuit (if any) come into contact with the case. There is only one part of the Dragon keyboard which actually touches the case, that being the left-hand side support. This support can easily be scraped clean of nickel spray to prevent any short circuits.

To earth the inside of the case I connected the wire that was soldered to the Veroboard to an earth point on the power supply. This effectively earths the inside of the case. I cannot stress how important it is to check that there is no part of the wiring on the circuit board touching the case. Having connected the wire, the case can be reassembled. The upper half fits snugly into the lower

half, making a near perfect earth shield around the circuitry. The shielding cannot be made 100% perfect, as there are cutouts for joystick/cassette ports etc.

When reconnected to my transceiver, the results were very pleasing. A very large reduction in computer generated noise was immediately noticeable. Now many more weak stations can be received than before. The problem of TV generated noise from the timebase generator still exists, but it is only a minor irritation compared to the noise Dragon.

I must state that I and Dragon User cannot be held responsible for any accidents or disasters that may befall anyone attempting this modification. The metal screening spray can be obtained from Magn Electronics, part no. VM11T, page 496 in the current catalogue.

I would like to add in closing that I very much appreciate Dragon User, having every single one since publication started, and I usually find something in every issue that is of interest.

Introduction to Dynacalc

JB Slinger introduces the spreadsheet package Dynacalc.

THERE was a request in the July issue of *Dragon* for someone to write about *Dynacalc*. *Dynacalc* is a spreadsheet package. A spreadsheet is a big table with lots of 'boxes', called cells, arranged in rows and columns. A spreadsheet package is a computerised version which has been partially pre-programmed. In use, a user completes the programming to suit the particular need of the moment. Putting it another way, a spreadsheet package is an ultra-high-level language for programming tabular calculations. I could have said that at the outset but didn't for the reason that spreadsheet packages are always described as potential purchasers in such a way as to minimise the programming aspect. Quite senior managers write or build computer spreadsheets, which they would not do if they thought of the activity as programming! (No, it's true. At their business executives wouldn't use computers because they thought it was typing. *Just* in truth, this language is so high level that the programming is minimal as will be seen.

Locked in cells

The programming consists of typing items into the various cells. The items may be text, or figures, or expressions (formulas). The first two are self explanatory; expressions are given in terms of cell references rather than variables but, this aside, will be understood by any basic programmer. Thus a cell which contains $+B3*B4$ will contain the product of the contents of the two cells known as B3 and B4. Note that if the contents of either of these cells is changed, the computer spreadsheet will instantly recalculate to show the new product. In addition there are a great number of preprogrammed functions; for instance $=\text{SQRT}(...)$ will evaluate the square root of the expression in the brackets. Traditionally, cell references are given with the convention that a capital letter is used to denote the column and a figure is used to denote a row; cell B3 would be the second cell from the left, and the third row down.

At this point it is worthwhile to introduce the word *worksheet* to describe a computer spreadsheet; this is common jargon and obviates any possibility of confusion between a paper spreadsheet and a computer one.

As a first example of a worksheet, look at **Listing Two**. The meaning of each cell will be obvious although the overall objective may be obscure. So before describing the programming, I shall digress to explain the objective, which is to solve Gordon Lee's September puzzle.

Briefly the September puzzle was to find a vulgar fraction which is a close approx-

imation to the fourth power of pi, the circular constant. From this vulgar fraction we had to produce an approximate value for pi which I will call 'Indian pi' in deference to the man who discovered this approximation. Indian pi had to be accurate enough to give an error of less than 1 inch in the circumference of the earth when compared with the value calculated from the accepted value of pi. I chose to set up my worksheet to follow the statement of the problem. For further exemplification of the worksheet method, I give a basic program of the same method; see **Listing Three**. The degree of precision of the *Dragon's* Basic is barely adequate for the problem but the method should be clear enough. I calculate the diameter of the earth in inches, and thence the circumference of the earth, in lines 38 and 40. I also calculate the 4th power of pi. This has to be converted to a vulgar fraction by trial and error. I multiplied the value of the 4th power of pi by various trial integers (trial denominators) and rounded off the products to trial integer numerators (see lines 70 and 80). Each numerator/denominator pair was then converted to a trial value of Indian pi and the trial circumference was calculated and compared with the true value. I used the same method in the worksheet except that the trial denominators were put into cell B1 individually. Because *Dynacalc* is accurate to 18 significant digits, the procedure gave an acceptable value for Indian pi and the vulgar fraction.

Now to return to the mechanism for programming the worksheet. I use *Plus*, so I have to boot the operating system first and then load *Dynacalc*. Actually I do both at the same time since my *Dynacalc* disc has the operating system on it as well and I wrote a startup file to load the package automatically. When loaded, *Dynacalc* displays an empty worksheet with the default column width of 16 characters. This is OK for most purposes, but I had decided that 20 characters width would be more appropriate for my present purpose so I had to change it. This was done by typing $\text{COLUMN}=\text{width}$. The slash key / signifies that I want to type a command. The A means that I want to change the 'Attribute' of the worksheet, the first W signifies that I want to alter a window (*Dynacalc* has windows), and the second W that I want to alter the width. There is a question then asking me how many characters wide and the figure 20 is the answer. Entering information into the worksheet is simply by pointing to a cell with the cursor keys, typing the entry and pressing Enter. If the contents of the entry cell are used in an expression in another cell, the worksheet will instantly recalculate itself to reflect the change. Magic!

Well not quite magic because there are three subtleties. The first one is that certain formulae only need to be evaluated once.

For example in **Listings one and two**, the diameter, the true circumference, and the 4th power of pi are really calculated constants. I chose to leave these as formulae for the purposes of this article, but in a real situation, to save memory and for speed of recalculation, I would want to evaluate them once and for all time. This can be done by entering the expression for the circumference in the form $+72*1780*39407$.

Exclaim and vanish

The exclamation mark causes the formula to be evaluated (and to disappear) and then pressing the Enter key stores the result in the cell. The second subtlety is that recalculation of a worksheet follows a definite order; it is by column or by row (selected by F4) for column-wise or R4R for row-wise recalculation. Whichever is selected, the worksheet recalculates from the top left (cell A1). If any cell has a reference to a cell which has not yet been recalculated the cell will not evaluate correctly. There are situations where forward references have to be used, such as where one is doing an iterative calculation, but one should try to avoid forward references if at all possible. If there are forward references, one can cause recalculation by pressing the exclamation mark several times until the values stabilise. The third subtlety is my own. **Listing one** is the natural or default format in that it shows the figures not the formulae. However, I prefer to build a worksheet in the format of **Listing two**. You can switch between the two formats with a toggle command, F10. There is supposed to be a way to have some cells in formula mode and some in value mode but I have not found it; also there is supposed to be a way to protect certain cells from inadvertent corruption of a worksheet and I have not found that either. Both of these features are desirable as it is so easy to corrupt a worksheet as it is to build it. Pay attention to this if you build a worksheet for someone else to use.

Good presentation

I should now like to review the advantages of using a worksheet. I have already mentioned the 18 digit precision. It is quick to set up a worksheet; the specimen probably took less time than reading this article will take you. It is easy to get a good presentation of a calculation; third from now it would layout the data, the method, and the results all in one table for a research report. Irrespective of the calculation featured, it now appears as who uses a worksheet simply because it is the quickest way to type a table (trial and time

is mainly). There is a rudimentary graphing feature which might be useful. If you have figures in a wide column, WPP will convert the figures into a horizontal bar chart with a hash sign for every integer value. A specimen is given as **listing four**. There are many built-in functions, see **listing five**; note I have only tested those used in this article. These are sorting and copying facilities too. These are extremely useful in programming a worksheet. I am preparing a further article in which they will

be demonstrated. It is not necessary to type similar formulae into dozens of cells. There is a definite art in using worksheets; what to do is usually obvious but there is a substantial amount of 'show-how' involved in doing it with the minimum of fuss. For this reason I am unprepared to advise anyone who is seriously interested by this article to read a good book. There is a strong family resemblance between *Dynamic* and the most successful spreadsheet package, Lotus 1-2-3. There are

books about the latter. I have the first edition of *Using 123* published by the Que Corporation. Try to borrow a copy from a library.

I am writing to reply to specific questions if anyone cares to write to me; my address is: Dr Taplin Way, Taplin Green, High Wycombe, Bucks. HP10 8DW. Next month (or thereafter) I hope to continue with a simple example of how to construct a worksheet.

LISTING 1: FIGURES

3-8-88

PAGE

1

DENHOT NUMBER

22

PI

3.141592653589793

DIAMETER IN INCHES

581811088

REAL CIRCUIT

1576489378.488878

.4TH POWER OF PI

37.4828318248824

ROUND NOT

2143.8888882748883

NUMERATOR

3343

INDIAN PI

3.141592653589793

DIFF OF CIRCLES

.382323778872307

LISTING 2: FORMULAE

3-8-88

PAGE

1

DENHOT NUMBER

32

PI

3.141592653589793

DIAMETER IN INCHES

7541788833888

REAL CIRCUIT

82884

.4TH POWER OF PI

82483483483

ROUND NOT

81487

NUMERATOR

81477.5+883

INDIAN PI

85881185881085+8123

DIFF OF CIRCLES

82-83184843

10 PRINT#3, "LISTING 3: BASIC PROG"

12 PRINT#3, "CALCULATION OF INDIAN PI"

17 PRINT#3

14 PRINT#3, "DENHOT NUMBER DIFFERENCE"

20 P1 = 3.1415926535

20 D1 = 7541788833888+DIAMETER

40 C1 = P14D1+1+GIRCUIT IN INCHES

50 P4 = P14P14P14P1

60 FOR DE = 15 TO 25+DENHOTIN.

70 X = P44DE

80 M1 = INT(10.5+X)

90 JP = 8881888888+DE15+INDIAN P1

100 OF=CM-(D14P1)+DIFFERENCE

105 PRINT#3-2, DE17 "P411" "10F

117 NEXT

LISTING 3: BASIC PROG

CALCULATION OF INDIAN PI

DENHOT NUMBER DIFFERENCE

15 1481 38785.5

16 1550 -114855

17 1656 -188928.5

18 1750 81743.5

19 1851 -48384

20 1948 38785.5

21 2046 -78813.5

22 2140 -.8

23 2248 71871

24 2300 -38528.5

25 2405 38785.5

LISTING 4: DYNAMIC CALC GRAPH

3-8-88

PAGE

1

1 8

2 88

3 888

4 8888

5 88888

6 888888

10 88888888

8 88888888

6 88888

4 8888

3 888

2 88

1 8

LISTING 5

1. Arithmetic type Functions

#ABS()	Absolute Value, as in Basic
#ACOS() #COS()	Cosine, as in Basic
#ASIN() #SIN()	Sine, as in Basic
#ATAN() #TAN()	Tangent, as in Basic
#AVERAGE(list)	The mean value of numeric cells in the list
#COUNT(list)	Number of numeric items in list
#EXP() #LN()	Natural logarithm, as in Basic
#INT()	Integer value, as in Basic
#LOG()	Log. to base 10
#MAX(list) #MIN(list)	Returns the largest or smallest value from the list
#NPV(list)	Net Present Value of items in list Used in financial work
#PI	The circular constant
#RAND()	Random number generator
#ROUND(d,n)	Rounds off figure n to a degree specified by d which is a power of 10. Note alters the number as opposed to its appearance
#SQRT()	Square root, as in Basic
#STDEV(list)	Standard deviation of numeric items in list
#SUM(list)	Sum of numeric items in list

2. Lookup type functions

#CHOOSE(n,list)	Chooses nth item from list. "n" is usually the contents of a cell
#INDEX(n,list,z)	Lookup function based on exact matches between n and an item in the list; returns item offset from the matched item into column or row z
#LOOKUP(n,list,z)	Very similar to #INDEX but based on greater than test

3. Logic type Functions

#AND(list)	Returns true if all are true
#OR(2 items)	Returns true if 1 is true
#ERROR	Forces logical "error".
#IF(test,true,false)	Returns contents of true cell or of false cell depending upon whether test cell is true
#ISERROR(cell)	Test if cell has logical "error"
#ISNA(cell)	Test if cell is empty
#NA	Forces logical "not available"
#OR(list)	True if 1 or more are true
#FALSE	Returns logical "false"
#NOT(item)	Reverses truth value
#TRUE	Returns logical "true"

Dynacalc by J B Slinger

Basic Monitor

Craig Henderson gets inside his Dragon's memory and operates

THIS Monitor program was written to aid me in examining the contents of my computer's memory and performing various tasks on it. I am very new to Machine Code and I own Address from Greenview Software. Although this has a monitor I found it was very tedious to load the whole thing in a machine I wanted to use only the monitor so I decided to write my own.

I realise that Peter Whittaker published a monitor written in machine-code in May 1987 but this one is written in Basic more convenient not only to type in but to have more memory space for the machine code which is the subject of your investigation, and it is quicker to LOAD off cassette.

When you run it you will get a title page and then will be asked if you want to load some Machine Code off cassette. After that you will be asked the width of your printer and then go into the main program. If you have not got a printer then just enter 0 to the width.

Operations

The program has eight

operations which are called from the main menu by pressing the appropriate key (the ones shown in brackets here). These operations are: (A) Examine memory with auto-scroll, (C) Copy a block of memory, (D) Display page (Block) of memory, (E) End program, (M) Modify block of memory, (O) Output hex dump, (P) Poke one location, (V) Verify block of memory, (X) Examine memory with auto-scroll. You will be asked to enter the start address as with all the routines, and the screen will fill up line by line. The speed of this can be altered by pressing 0-9: 0 is a pause, 9 the fastest and all others in between respectively. When you enter the mode there will be 2-digit hexadecimal values on the left next to the address and on the right are the corresponding ASCII characters. These characters can be made to disappear and re-appear by the pressing of (W). To quit the routine and return to the main menu press (Q).

(C) Copy of a block of memory. On calling this routine you will be prompted for the start

address of the block to be copied, followed by the start address to be copied to. A limit of 1000 bytes at a time is on the routine which I find plenty. If you selected this routine accidentally, enter the start address and addresses as the same value and you will return back to the menu. (D) Display block of memory with only the address of the byte in the top left hand corner of the screen displayed. The address of this block can be changed by pressing the UP and DOWN arrow keys. (E) End program. This re-boots the machine so be sure not to use it until you have a safe copy on tape or disc. (M) Modify Block. You are first asked for the start and end addresses and then if the same values are input in either location within the block. (TV) then you enter the value and the computer will do the rest, but (W) you are asked to enter them all individually one after another and the address is shown. (O) Output dump in hexadecimal with addresses to screen or printer. The start and end addresses are prompted for and then the data is to go

to the screen (S) or the printer (P). Then the data is either dumped straight onto the printer or to the screen with auto-scroll and at the end a small pause before returning to the menu. This can be paused anywhere by using the usual <SHIFT> and <Q>. An example of this dump is shown in listing 2. (P) Poke a single location with a value. You will be asked for the address and then the value and then you will return to the menu. (V) Verify a block of memory. Following the input of the start and end addresses, the computer will display the current location and value at which it is working. If the location is OK then it will go on to the next location, but if there is something wrong for that area is (R)OK then you will get a fail message with details.

I do hope this is of use and you enjoy using it. If you do not like the idea of typing this in then a copy is available from me on cassette at the price of £2. Send a cheque to Craig Henderson, "Sandy", 28 Woodbury Avenue, Wells, Somerset, BA5 2XW.

```

1  CLS
2  PRINT "***** BASIC CODE MONITOR *****"
3  **
4  ** WRITTEN BY CHRIS D.B. **
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A choice of words

Program: *Ediltext*
Supplier: R & A J Preston,
Kings Hall Court, St. Brides
Major, Mid Glamorgan.
Price: £5.95

PRESTONS are continuing to produce re-run of good software and breathe new life into them by halving the cost of the package. *Ediltext* is their latest offering, being originally produced by Hextreme at £10.95. Please do not dismiss this program on the basis that it does it as competently as good, quite the contrary! *Ediltext* is a versatile word processor providing most of the facilities found in very much more expensive word processors, and can be operated via disc or cassette. The disc version is called *Ediltext*, and is on the reverse of the tape. The main features allow normal or justified printing, automatic wordwrap, and include full editing facilities. The latter are fairly comprehensive, enabling letters, words or combination of words to be added, deleted or changed. There is even a Find and Replace routine which couples the Move Lines and Paragraphs to anywhere in the text, and makes form design, or standard letters requiring customisation, very easy.

Additionally, the program allows upper and lower case printing to any required typewritten, print formatting to include multiple top margins, and various typesetters.

The standard choice of print fonts is:

a) *10/12* (10 characters per inch, making main text to be printed in a given line width).

b) Double print (prints the line in two passes at the head, instantly advancing the paper, thickening the dots to achieve a higher print quality).

c) *Emphasised* print (each dot is printed twice to produce the effect of bold type).

d) *Enlarged* print (gives the impression of double-height characters printed in bold type - very useful for headings and title pages).

e) *Condensed* print (prints full characters to the inch, compared with the normal to characters to the inch, or 'chasing' like type - very useful for half-sized documents and wide tabulated data).

You can of course mix these typesets as required by printing the document in sections, using the Change Type Face menu incorporated into the program, which will also automatically revert to the normal Print type.

Once you are satisfied with the layout and content of the actual print fonts you can then execute a draft print which prints out the text line by line as it is stored in the Dragon's memory. Each of the lines is numbered and all carriage returns are marked. When you have completed your draft print or even if you did not require it at all, you can enter the Formatted Print routine which enables you to format the text for printing to virtually any typewritten up to the maximum allowed by your printer, and with any desired number of lines per page. The text can be justified, margins altered, and line spacing adjusted. Of course, if you wish to save the text to tape or disc there is a very useful facility for doing so, which incorporates a special header file identifying the text into the filing routine.

The instructions for the operating of *Ediltext* are clear, concise and simple and also contain a prompt chart to assist you in your early running of the program. As if all this were not enough, there is even a short appendix outlining examples of how to save time using the facilities overall.

Software says this program is very adaptable, easy to use and given all the facilities it contains, at £5.95 it must rate as one of the best buys of the year, and receives my wholehearted endorsement.

P. L. N. Hounslow



The ball rolls again

Program: *Rollaball*
Supplier: R & A J Preston,
Kings Hall Court, St. Brides
Major, Mid Glamorgan.
Price: £7 (cassette)

THIS is not a review of the same piece of software that has been reviewed before in *Dragon User*. As yet I do not even know if it will replace the original *Rollaball* or be called *Rollaball2* or whatever.

When I first received *Rollaball* for review from Hextreme many moons ago I was delighted as I had seen the game, before it was finished, at the Great Show in 1983. After many attempts at loading it I eventually got it to work only to find that my fingers were not nimble enough to work the keyboard. Having accessed the cheat screen (hands up those of you who don't know it's there) I set the colours to red and green and also stopped the cubes moving around. This made the task of getting around the screen much easier. Then I set about mapping the 49 screens while my youngest son David took over on the keyboard.

Rollaball struck in the form of an unmemorable and I was still experiencing loading problems from the cassette. Having contacted the author, Jonathan Cameright, I was sent a disc version, but came upon the same unmemorable. After several phone calls to Jonathan, he eventually agreed with me that I was right although we both agreed that probably nobody would be able to get that far playing the game normally. Now I have received the updated version and this is what the original should have been.

To those of you who do not know the game at all I will give you a brief description. You guide a ball along a 3D landscape collecting 49 jigsaw pieces which form a picture in the top left hand corner of the screen as you pick them up. To move from one screen to another you select your exit, move on to it and press the appropriate key. At the start of the later version you are presented with a menu from which you can define your own keys for

the directions, picking up etc, and this is a definite advantage over the original. There is no joystick option in either version of *Rollaball*, another reason because the ball moves over some narrow scenery and it would be even more difficult than using the keyboard. You can also select the colour set and the speed of play also improvements on the original.

The scenery in this version is slightly different to the original and a score of 100 points is now awarded for each jigsaw piece collected, whereas there was no score feature in the original game. At first I kept getting caught by the enemy cube as I arrived on a new screen but if you watch closely you might discover how to avoid this. Several of the jigsaw pieces appear to be impossible to collect at first but a little imagination and experimentation should help you to get them all. One piece in particular is very difficult to see but I can assure you that it is there. When (or rather if you have collected the 49 pieces and the jigsaw is complete then a flying saucer appears overhead and the ball flies into it.

There is the usual Cartwright musical accompaniment and an unusual method of clearing the screen which I really enjoyed. I must thank my son David once again for doing most of the work. To sum up I found it to be a challenging game which has been greatly improved from the original.

If I had not seen the game so long ago I would probably have thought that Jonathan had taken parts of *Marble Madness* and *Alfred* and put them together to make one game. I think that this is now a very good game, albeit very difficult to get very far into, let alone complete, unless you can find the pokes for unlimited lives or for stopping the cubes moving about.

Mike Strat



Quick on the Draw

Steve Taylor draws the line — from assembler, fast.

THIS routine is designed to replace the Dragon's LINE command for use from assembly language in PMODE 4. I was prompted into writing it by Brian Cadogan's reluctance to explain how to use the new routines from assembler. Although it can be done, it's so complicated and messy that I agree with him entirely — it's not worth the effort.

The new routine works in any PMODE, and in any valid colour box, but this program is configured for PMODE 4 only, although it does work for colour 0 or 1 or colour 1 on 0 using either SCREEN 12 or 11. The reason for this restriction is that anyone attempting to write graphics programs in assembler has only one motive — speed. Generalising the program for multi-colour and several modes would slow it down too much for it to be of any advantage.

Use has been made of Bresenham's algorithm 1, which is extremely fast. The reason for this is that the normal incremental algorithm requires dydx to be calculated, the result of which must be stored as a binary fraction to preserve accuracy. Division and fraction handling are both extremely time consuming and so Bresenham's algorithm uses only integer addition, subtraction and multiplication by two (which is achieved quickly by a logical shift left).

To use the routine, first store the start and end points in the area LDATA in the following format:

```
LDAX 0
LDAX 1:3:Y1
LDAX 4:4:X2
LDAX 5:5:Y2
```

where the Microsoft notation is LINE (X1:Y1-X2:Y2). If the line is to be PRESET, then store the value of the background colour in the variable BGCOLOR (back = 0, green or white = 1 in either SCREEN 12 or 11). Storing the value of the foreground colour in BGCOLOR will cause the line to be PRESET. Then call the routine with BSWP STLINE. All registers used are preserved.

Note that all the coordinates are 16 bit values in order that negative numbers are handled correctly — a 16 bit register should therefore be used to effect the transfer.

Note also that X2 must be greater than X1 — i.e. a line is drawn from left to right. This speeds up the routine. Failure to observe this notation could produce strange results.

Vertical lines are extremely fast. Use can be made of the fact that since the position of a pixel has been determined, it does not change horizontally and so all that is necessary is to move the set point by 32 bytes each time. To draw a vertical line, first store the upper Y coordinate in location YU and the lower Y coordinate in YL, where YU, YL, YU. This X coordinate is stored in XVBINT. The routine is then called with BSWP VLINE. Again, all registers are preserved and the stacks are unchanged. Note that the vertical line is always drawn from top to bottom and so YU should always contain the Y coordinate which has the smaller value.

Both routines take the top left of the screen as (0,0). Although this is an unbelievably stupid notation, presumably coined by some particularly unimaginative at Microsoft, it has been retained for the sake of familiarity (it also makes calculations that little bit easier).

Subroutines

The subroutine WBYTE returns the address of the byte containing the graphics coordinate stored as (XCOORD,YCOORD) in location BYTE using the relationship:

$$\text{BYTE} = \text{SSDART} + (32 * \text{YCOORD}) + (\text{XCOORD} / 8)$$

where SSDART is the base address of the screen. This is stored by Basic in location 8A (hex) as the routine produces the conventional binary graphics stampage (eg PMODE 4.1 — PMODE 4.2 etc) irrespective of whether or not dots are connected.

The subroutine WPMODE determines which position the BYTE is being referenced and divides the mask in the B register by it if you imagine the B register mapped onto BYTE, then there will be a 1 at the position of the pixel and a 0 everywhere else.

One further point — neither VLINE nor VLINE check to see if the line being drawn is actually on the screen. It would therefore be quite possible to draw a line from (0,0) to (65535,65535) although if you try it you will almost certainly crash your Dragon — beware!

Finally, if anyone has any problems or wants anything explaining further, write to me at 85 Plain Spot Rd., Shirley, Nottingham. NG16 5BG enclosing a stamped SAE.

References

1. Algorithm for Computer Control of Digital Plots; J.E. Bresenham, IBM Systems Journal 4(1), 1965, pp25-30.

```
*****
*
* PROGRAM 'Lines'
*
* LINE COMMAND FOR THE DRAGON
*
* 17-6-87
*
*****
*
* ORG 10000
*
* STLINE PSRG X,Y,D,U
* LDH #BA
* STX SSTART
* LDA #01
* STA IOR01
* STA IOR02
* STA FLAG1
* LDB LBATA+4
```

```
LDX #LBATA+2
LDY #LBATA+6
* K
CMPD *Y
BGE SWAPY
LDB *Y
SUBD *K
STD DY
BRA CONT1
* SWAPY
STD *Y
STD DY
LDA #00
STA FLAG1
LDB DY
CMPD DX
BHI YING
LDX #COORD+1
LDY #YCOORD+1
LDA LBATA+5
STA FINISH
```

```

SUBD LBATA
STD DX
BBB LEAVE1
LBA #-1
STA IORD2
LEAVE1 BRA INIT
YINC LDX #YCORD+1
LDY #XCORD+1
LDA LBATA+7
STA FINISH
LDD BY
LDU BX
STU BY
STD BX
LDA FLAG1
CMPA #00
BBB INIT
LDA #-1
STA IORD1
LDD BY
INIT LSLB
ROLA
STD INCR1
SUBD BX
STD BBB
LDD BY
SUBD BX
LSLB
ROLA
STD INCR2
LBA LBATA+1
STA XCORD+1
LBA LBATA+3
STA YCORD+1
LBRB WBYTE
LBRB WPIXEL
LDU BYTE
LDA BKCOL
CMPA #00
BBB BLACK5
COM ,U
ORB ,U
COMB
BRA WHITES
BLACK5 ORB ,U
WHITES STB ,U
LOOP1A LBU -1,X
LDA IORD1
LEAU A,U
STU -1,X
LDD DEE
CPD #0000
DGE ELSE
ADD INCR1
STD DEE
BRA NEXT
ELSE ADD INCR2
STD DEE
LBU -1,Y

LDA FLAG1
CMPA #01
LBA IORD2
LEAU A,U
STU -1,Y
LBRB WBYTE
LBRB WPIXEL
LDU BYTE
LDA BKCOL
CMPA #00
BBB BLACK5
COM ,U
ORB ,U
COMB
BRA WHITES
BLACK5 ORB ,U
WHITES STB ,U
LDA ,X
CMPA FINISH
BBB LINEND
BRA LOOP1A

LINEND PULS X,Y,B,U,PC
#
# *****
# DRAW A VERTICAL LINE FROM 0
# Y(UPPER) TO Y(LOWER)
# *****
#
VLINE PSHG B,Y
LDD #0A
STD SSTART
LDD YU
STD YCORD
LDD XVERT
STD XCORD
BBB WBYTE
LBRB WPIXEL
STB MASK
LDD BYTE
STD BX
LDD YL
STD YCORD
BRB WBYTE
LDD BYTE
STD BY
LDY BX
LINEP LBRB MASK
LBA BKCOL
CMPA #00
BBB BLACK7
COM ,Y
ORB ,Y
COMB
BRA WHITE7
BLACK7 ORB ,Y
WHITE7 STB ,Y
LEAY 32,Y
CMFY DY
BLD LINLP
VLEND PULS B,Y,PC ;RETURN
#

```

```

*****
#
# VARIABLES & SUBROUTINES
#
*****
#
MASK RMB 1
DEC RMB 2
BK RMB 2
BY RMB 2
INCR1 RMB 2
INCR2 RMB 2
FINISH RMB 1
GSTART RMB 2
IDRD1 RMB 1
IDRD2 RMB 1
FLAG1 RMB 1
XCORD RMB 2
YCORD RMB 2
#
BYTE RMB 2
PIXEL RMB 1
#
TU RMB 2
VL RMB 2
XVERT RMB 2
#
LDATA RMB 2      IX1
RMB 2      IY1
RMB 2      IX2
RMB 2      IY2
#
INXCOL RMB 1
#
#-----#
# CALCULATE IN WHICH BYTE THE #
# PIXEL TO BE SET/RESET LIES #
#-----#
#
WBYTE PSHE 0
LDB LDB GSTART
STD STD BYTE
LDA LDA YCORD+1
LDB LDB #32
MUL MUL
ADD ADD BYTE
STD STD BYTE
LDB LDB XCORD+1
LDRB LDRB
LDRB LDRB

```

```

LDRB
SEN
ADD ADD BYTE
STD STD BYTE
PULS PULS D,PC      ;RETURN
#
#-----#
# CALCULATE WHICH PIXEL AND #
# LOAD B REGISTER WITH MASK #
#-----#
#
UPIXEL PSHE A
LDA LDA XCORD+1
ANDA ANDA #807      ;00000111
STA STA PIXEL
CMPA CMPA #80
BHI BHI NEXT1
LDB LDB #808      ;10000000
PULS PULS A,PC
NEXT1 CMPA #81
BHI BHI NEXT2
LDB LDB #848      ;01000000
PULS PULS A,PC
NEXT2 CMPA #82
BHI BHI NEXT3
LDB LDB #828      ;00100000
PULS PULS A,PC
NEXT3 CMPA #83
BHI BHI NEXT4
LDB LDB #818      ;00010000
PULS PULS A,PC
NEXT4 CMPA #84
BHI BHI NEXT5
LDB LDB #808      ;00001000
PULS PULS A,PC
NEXT5 CMPA #85
BHI BHI NEXT6
LDB LDB #804      ;00000100
PULS PULS A,PC
NEXT6 CMPA #86
BHI BHI NEXT7
LDB LDB #802      ;00000010
PULS PULS A,PC
NEXT7 LDB #801      ;00000001
PULS PULS A,PC
#

```

Word processor applications

Roger Merrick finds that there is more to WP than words

DOES the subject of word processor applications need an article, you may ask? Surely with a word processor, you process words. Depending on whether you use it home or at work, this may involve writing letters, essays, novels, articles for computer magazines, reports and so on.

Well, there are more applications for a word processor than may immediately meet the eye.

DO-9 users will be well aware that Stylus can be used to prepare program text for BasicOS, ASB, C, Pascal and so on. In a similar way, Dragon systems word processors can be used to prepare Basic programs.

Load as Basic

If working with cassette input/output, a word processor like Minstrel can be used to prepare an asci file that can subsequently be loaded directly as Basic.

The obvious disadvantage of preparing Basic in this way is that it is not interactive; a program cannot be run from within the word processor. Cassette I/O makes the process of saving the word processor files, and loading and test running the Basic a lengthy and frustrating one.

However, there are advantages. If the system is used correctly, it is probably not helpful to write from scratch a Basic program within a word processor, but when modification of an existing program or programs is required, then the global/recursive search and replace facilities of a word processor come into their own.

Merging one (program) file with another is an inbuilt feature of most word processors. The files will be loaded sequentially in memory, up to the limit of workspace. There are no worries about stored line numbers accidentally overwriting each other.

Block move

Block move operations can be used to restructure programs. Minstrel contains **RESEQUENCE** commands that automatically correct line numbers.

With justification off, a line can be appended to a previous line to optimise program operation.

Files can be saved to disc, speeding the whole process of program development, but the question of getting the DATA files in memory as Basic is not straightforward. Aparent I read from cassette a valid Basic file heading into the word processor, then I merge the DATA file from disc, and finally

save to cassette. The resulting file can be loaded as Basic. There is certainly a better way, and I would like to hear it.

Dise doctoring

If the word processor allows any form of mail merging, build a mailmerge file of the Basic tokens, two byte tokens first, single byte tokens subsequently, in the same order, build an equivalent file to the asci text Basic words.

If a Basic program is accidentally killed on a disc, use DragonDO9's **DISK40** command to read and display the sectors until the remains of the required program are located. The brighter folk can read the directory content and interpret the information to locate the lost file directly, sometimes. Having located the remaining sector of the lost file, they should be read into an array in memory, and then written to a data file on a disk. This data file can then be read into the word processor, and the mailmerge facility can be used to replace the Basic tokens with their text equivalents, producing a readable version of the program and facilitating the reconstruction of any lost/garbled areas. The resulting file can be saved as described for Basic files above.

The reason a mailmerge facility has to be used rather than search and replace is of course that the characters used as Basic tokens are not available from the Dragon keyboard. Some word processors may allow the search string to be defined in terms of $(CH1\&len1) + (CH2\&len2)$, which would allow the tokens to be searched for.

Disassembly

In a similar way, a file of assembler mnemonics and their decimal equivalents can be constructed. Working preferably from a disc based file, a machine-code file can be read as data into the word processor and realigned with the assembler mnemonics file. Working from a disc file is likely to be required as word processors cannot be moved around in memory and generally reserve all available memory for their own use.

Database

Many of the databases that I have seen for the Dragon are tight, restrictive about the way they can be searched. How irritating I find it, to search a database of names and addresses, to find that I must specify an entire search string, not a substring. If

is a name, and I search for Williams, depending on the database, I may get a 'no record/entry' type of report. Perhaps I wish to prepare some information based on the location of addresses in the database, by visiting all those in certain postcode areas. Again, many databases will not cooperate with a desire to collate all postcodes in area B15, if the postcode field is 7 characters long. If I'm lucky, the database may automatically fill in wild cards for the rest of the field.

But with a little self imposed discipline, data can be structured in a word processor in such a way that the word processor's search facility can be used to find every occurrence of particular strings. Of course, this is only a one-dimensional search, but many of the Dragon databases I've seen are only one-dimensional anyway.

The advantage of the word processor is that a search can be made of any search string that can be entered from the keyboard, from one letter to the word processor's search string buffer limit (Jovan - Minstrel's is 254 characters). A disadvantage of course is that data has to be loaded in rather large blocks, whereas a database should read on a string by string basis. In practice many Dragon databases seem to load database information in big blocks anyway.

Another use I made of the word processor was to construct a yearly diary. Twelve files, each named for a month of the year, and initially consisting of dates 1 to 28/29/30/31 depending on the month, with the relevant days of the week appended (using block copy and repeatedly saving text under different filenames to minimise typing).

I can then enter data as required, and use the word processor's search facility to find any coming appointments/events.

Accounts

Not many Dragon word processors have the facility to permit alignment and summation of figures. Minstrel is one, but this feature exists then simple accounts work can be carried out within the word processor.

Conclusion

A word processor is a powerful and flexible piece of software, which lends itself to applications wider than simple preparation of text. With the limitations of DragonDO9, and the difficulties of transferring files produced within one application being loaded into another, a powerful word processor can perform many of the functions of simple text processing software, such as databases, as well as better.

John Williams

Show us an alternative

Ken G. Smith makes a great journey into the Black Country to find the legendary Einstein, and maybe Dragons.

This question I kept asking myself was "Is it worth a round trip of four hundred miles in order to attend the first ever Alternative Computer Show?". I have long believed that the way forward for us was to form an alliance with users of another of those machines that the mainstream of the computer trade ignores. When Einstein announced their event to be held in Birmingham, I felt that I had to go. The only problem was that journey. As Kings turned out even the morning fog had not yet in its way and I arrived in Birmingham only three and a half hours after I left out.

I have to say the directions in the advertising left a lot to be desired. Junction from the M6 may be easy enough to find, but from there it was assumed that we would all know our way. It would not have taken much to post a few "to the show" signs, or at least include in the advert "follow signs for Aston Hall and ...". I spoke to several people who had spent half an hour or more trying to find the Aston Villa Sports and Leisure Centre. Those who did find it were rewarded with a great show with over forty exhibitors, which unfortunately only had had Dragon connections. I must admit that I did find this a bit disappointing, only Cric and Texas Instruments were less well served. However, I think that this was partly due to the unfortunate timing, the Weston show being only three weeks away. The event was originally conceived as a Turing Einstein show, and only recently was it decided to include other machines. This also meant that there was little time to recruit exhibitors from other grounds.

Since the mainstream computer press started treating the Dragon as if it was a four letter word, so Dragon users became a bit isolated and some tend to think that we are the only ones with enough loyalty and devotion to our machine to keep it going through thick and thin. Well, if you thought that, then you are wrong. The TR800, for instance, ceased production long before the Dragon, but it still has an active, if small, user base and Einstein, the organiser of the show, is a software house dealing solely with Einstein programs. The problem we all face is our shrinking numbers. At one time one of us capable of supporting a show of any size, but together we can manage something big enough to attract suppliers of monitors and printers, etc. The Aston show had about five stands allocated to such people. But price floppy discs were everywhere. Only when the 16000 shows were really packing (there is some three or four years ago did such people attend,

Several groups attended, even regional ones for the Einstein, one each for the TR800 and Lynx. Even the Jupiter Ace managed a group. The National Dragon User Group, however, were conspicuous by their absence. Of the four Dragon software dealers, not one found any cause for complaint. John Peers said that even if he had not covered his cars (he thought he had) it would still have been worthwhile attending. Prestons and Compulapse reported a reasonable trade, though not as good as at Dragon shows. The four firms a real blast from the past. Cajon Marketing seemed to sink into obscurity some years ago, so it was a surprise to see them at the Aston Show. What was even more surprising was that they are still selling Dragon software, amongst other things, of course.

Everyone attending the show got a free copy of Micro Computer Mart, a fortnightly magazine mainly designed as a vehicle for advertisements, but also containing some interesting articles. The free ads for readers make it attractive and it is a relief to find a non-aligned magazine that does not treat Dragonians as if they were brain dead.

I found at least one new friend at the show and stayed longer than I had intended. The organisers are already planning another, bigger show for the same time next year. This gives us plenty of time to arrange our stands in order to accommodate the event. Alone our shows can only get smaller. Combining with others will enable us to continue longer and make more people aware of the fact that we are still here.

When all shows show such as Einstein are trying to establish is an excellent idea and one which will help to give users of older machines more contact and staying power. This is the first year that Einstein have thought of showing in other machines, and the timing, as Ken says, and as I have pointed out to a number of interested parties, was indeed unfortunate, so much so that a rumour was started that Dragon User was 'boycotting' the show. This was far from the case, for we had an obligation to put most of our support behind the Weston show, to which many Dragon users had already committed their resources. In future years I have great hopes that the Alternative Micro show will prove a suitable forum for the Dragon, and we will support them if they support us.

Breaking out in Chains

J R Sutcliffe tackles an old command.

I suspect many people have tried the CHAIN command when they first got their disc drive, and immediately gave up trying when their programs crashed.

It is a pity, because if you can get it to work, it allows the possibility of 256K of data

with 100K of program in a 32K Dragon, with timescreens and DGB, and space to spare. The limit of the program size is the size of the disc. My experience with this command is the result of others' experimentation trying to get a query into a job, i.e. converting a program which PCLEARREN to run under Basic 40.

1) Write a module (PROG1) which clears string spaces, and dimensions all strings and variables, the last statement being CHAIN "PROG2".

This module may not be very large. One of the folios of the Dragon CHAIN command is that though you can CHAIN smaller programs than larger ones, if you try the other way round, they crash. Put out all modules with 256 byte PEEK statements, up to, for example, 4K. Many modules get to more than 4K, and out the others till they are all equal. This is VIKIN IMPORTANT.

2) Write the menu and other modules PROG2,3,4,5, etc. When writing these, another string or variable is required, edit them into PROG2.

3) Modules can chain any other module in any order. All data and variables are maintained, only the program is changed.

4) Sometimes the CHAIN command takes a long time (a few seconds). In order to prevent the impression of any delay, crash, or just something on the screen before you chain the next module. For example:

```
MODS=PRINT"CONT MODULE PLEASE"
WAIT"CHAIN"EDITMOOT
```

5) It is recommended in the manuals to do a string compression FF=PRG2 at the start of such modules. This adds to the time taken by 4, but is perfectly acceptable to print instructions on the screen, and is needed. For example:

```
10 CLS:PRINT"INSTRUCTIONS FOR EDIT":FF=PRG2
20 REST OF PROGRAM
```

These delays are the penalties which we have to pay for having so much apparent memory. CHAIN will occasionally crash if modules are written in dialogues which each other, and works better when they are the same. The command CHAIN "PROG2" line is probably best used when expanding an existing program, if starting from scratch, then writing of other modules is required after they are written if all modules start at the beginning, or make use of a variable which is passed. For example:

```
10 IF N=1 THEN MOD ELSE IF N=2 THEN
200 ELSE 20
20 REST OF PROGRAM
```

Since only one module is worked on, and saved at a time, development can be much easier. Sloppy development only loses one module if there is a crash.

Now I have outlined the way of using CHAIN, it would be nice to find a cash of new programs making use of the new found space. Spread sheets, GMM CAD, PCB design, who says you need 256K of memory to run useful programs?

Dragonsword!

Paul Grade gets his inspiration from a fruit.

DO any of you remember those stories we used to read in just about every paper and magazine, the ones which used to run on about the "Age of the Computer" and how only the current generation of kids would be able to understand it? The stories aren't quite so frequent now, and it's ages since I last read one about "Superbital age 8 writes Magagame before breakfast and signs million pound contract before lunch", but sometimes the belief still lurks that anyone old enough to buy a drink is too old to understand computers.

I often wonder how such myths get started, because if the members of the NSUG are anything to go by, this one couldn't be more wrong. We have about five people under the age of twenty who are adequate programmers, and a couple of those are what I would consider to be professional class, but we're about the same number who are over seventy, and while they may like to think of themselves as youngsters, I don't think they quite fit the image that the media are trying to hand to them. Most of the "professionals" in the group come into the hobby in the age range, and although most of them aren't writing commercially for the Dragon, they earn their living writing for far more complex systems, so where does all this rubbish about Superbital programmers come from? And why did it start at all?

Personally, I think it began as an attempt by computer manufacturers to convince parents that their beloved beta would end up unemployable and begging on street corners if they were deprived of a ZX80 or an Atari 400 on which to learn these new mysterious skills, which alone could set them on the road to fame, fortune and an Amiga Gold card.

Convincing tale

There's nothing new about that kind of sales pitch... it's a well-proven fact that most parents will buy their kids anything they think will give them a better start in life, even if they can't really afford it... you've only to look at the pre-Christmas TV advertising to see how well it works. Of course, it is a double-edged line too, because most kids are bright enough to play along with it, and when they get their new toy (or my computer), they usually make a pretty good job of convincing parents that they are brilliant programmers, even if their ability really only extends to typing in the latest Wallykaz! Hypergame (promoted for PC from the original VHS 20 Hrs).

So what am I telling you this for? Not, as you expected, in an attempt to brow you to death, but it is the hope that someone out there on the other side of the keyboard might be able to tell me the answer to the problem which is steadily killing the home computer scene. If the beta aren't learning

to program, or to write about the subject, and the "professionals" are all engaged in making money on the far more profitable "business" market, where is the home computer material going to come from?

No Kidding

I don't think I'm making Editorial Disagreement when I say that even user groups and magazines are short of informative articles on hardware and software, and software distributors have reached a stage where they're virtually nothing new to distribute. (Far from editorial disagreement, Dragons are lucky because we have some very good people, and a well-informed following, who come up with a steady stream of information and comment, even if I sometimes find it as difficult to find any authoritative information on hardware that it is having to take results with a smile. This is because the younger users aren't learning fast enough, and the experienced ones are all concentrating on making it living. However, your comments on software distributors may be met with a howl of disagreement as, after a time when everybody was mourning the loss of colour-packaged magazine conversions, they've got their act together and are producing new, inexpensive material steadily.)

It would help if schools did more towards helping kids to learn to use computers properly, but there doesn't seem much chance of that happening. Although there are exceptions, most seem to rely on leading the kids which says to pass in order to run ready-written material, which is like leading them to turn on a light and calling it electrical engineering.

Fortunately, there are still a few kids who don't believe all they're told at school, and some of them hack away at their computer at home until they can make it do what they want without having to rely on someone else's ability, but they are few, and they usually get little or no encouragement, and eventually have given up because they are always being told to "stop messing about on that computer and do your homework", or people who can't see that even passing merely demonstrate the ability to pass exams, not aptitude at anything useful.

What can you do?

So what can you do? Well, if you're still at school, you could try teaching yourself, rather than kidding yourself that "Computer Studies" will teach you everything useful. If you're more advanced, you could stop complaining that I'm too old to learn that sort of thing and have a go at it. (My

father-in-law is 63 and he got his first computer last year. He's learning himself to program. He says the evening classes help a bit, but what you really learn from is sitting down and writing it. Oh? You could then pass on what you know to others of all ages, so that they have some incentive to learn. A little help and encouragement can do a lot of good.

Computing isn't a spectator sport. Sitting around playing with some else's program is about as instructive as watching Neighbours. Learn to write your own programs, learn to make, repair, and adapt your own hardware if necessary, and you'll find that what sitting becomes a lot more interesting.

I'm not suggesting that you shouldn't buy software, but that you should read the stage where, if the program you need doesn't exist, you can write it for yourself, and if your Dragon expires in a cloud of smoke and a screen full of garbage, you at least know where to look, even if you can't fix it yourself in the time eventually.

Yes, I know if I'm so good, why don't I do more about it myself? Fair question, but I don't really know what more I can do. Running NSUG takes over sixty hours a week, I've repaired more Dragons and assorted peripherals than I care to remember, I do try to answer enquiries if I can, or I do try to answer enquiries if I can, and write the odd for/downtop newsletter page for D. Over each month, generally, I try to reach people into mailing that owning a computer is not quite like owning a video recorder. It's a fair way machine. It may not make me very popular, but it gets better results, and it hopefully brings a few people out of their complacency long enough for them to start thinking about what they can do with their own resources, which in some cases is a whole new experience for them!

Tell me if I'm wrong

So that's why I don't run a software company, or do some of the other things I would like to do, because I don't have anytime left to do them in. Anyway, you own a Dragon too, don't you, so why should I deprive you of your chance of fame or notariety?

Yes, I do get tired of keeping on at people, but someone has to do it, and I got elected a long time ago!

By the way, if you are still at school and think I'm being unfair to you or your school, and that you really are a good programmer, and they really are teaching you something useful, write and tell us, I'd be pleased to be proved wrong. It isn't really that I eat people (I'm on a diet).

By the way, every letter that I've had in response to this column has been in agreement with my comments, and we'd like to hear from those who DON'T agree as well. (We did get one, Paul. See Letters Page).

Expert's Arcade Arena

Write to: 'The Expert' at Dragon User
48 Alexandra Road
Hounslow, Middlesex TW3 4HP

HELLO! I know you're dying to know what's in the column this month, so I'll waste no time. It's nice to be back on my throne again, and thanks to my minions for keeping it warm while I was away. Hee-hee! Haven't there been a lot happening recently? Quickbeams disappearing and then reappearing, Radio One has gone stereo, Neighbours has grown ever more nauseating, Dragons and Orange have grown and isn't Mandragora good, but the big news is that Dragon User has moved (We can see how long it's been away - Ed.). I'm a bit unsure about the trivial wallpaper on the walls of my new official Anyway, don't forget to send all those letters, postcards, certificates, cigarettes, bottles of gin, proposals of marriage and the rest of the gifts to the right place. (Go to the Editorial office, all the rest to the Basement).

So, to business, and in this month's column you'll find all the trivia and jokes and poems and cheats that've always found on these pages. Poems this month include: Mupster (does anyone know of an infinite lives poem for Mupster? Enthusiasts are disappointed when you play the 'Mud-singer' screen) Cashman and Guardian Angel, for which I send my thanks to Michael Crane - hello, Michael, thanks - and there'll be more from him in the next future. Also this month is a feature in which, in the style of other great geniuses who answer questions from their beloved public, I'm going to call 'Expert on the Spot'. Send your questions and queries to EDTS, however small and trivial or desperately important for the survival of the human race, and I'll answer them as soon as you can say 'Santitas! Santitas!' in Portuguese.

Poems

Mudges ... (C) 20 POKE 26628, x (127)
Cashman ... (C) 20 POKE 26733, x (255)
Guardian Angel ... POKE 10822, x (255)

Here's the first problem for the Expert on the Spot, from Keith Porteous: 'I have run

frustrated Beanzteller - this guy's got a superhuman patience barrier - and have been making my own screens with the editor, but what puzzles me is whether the screen's design will be saved to tape.' Familiar to us is the 'SURREALISTIC, BENTON, BENTON, BENTON' chest for Beanzteller but, as Keith says, you can't save the screens. To save the screens, you do in fact need to splash a bit more cash and buy an add-on, known as Beanzpatch.

As far as I'm concerned, to be asked to give away yet more of your hard-earned pennies for just a few minutes of program seemed a little too much, so I haven't interested in the tape. I gather Beanzteller is now supplied by Orange Software (although their version may be different to the original Microscreen version - if anyone out there knows, why not get in touch and let me know?), and Beanzpatch is also available for £100. By the way, all this information can be found on the Newstack of the May 1988 Dragon User. Orange is quite a busy company these days, and keeps releasing new products, software support teams and help them establish themselves in the market-place. We can't afford to lose any more Microdisks or Quickbeams and Orangepatch seems become a vital link in the future.

Yu-haw

New this, a quote from Eric Homby. He wants to know why his 'beautifully acquired copy of Module Man crashes every time it loads. And you sure it's not a Tandy version? Caffeinate, my copy always works, so quite bluntly, mate, it looks as if it's dull. Don't bug from the cowboy in future - and take a step on the ramp. Here's one for you lot to work on, also from Keith. How do you get off the last screen of Caledon's Oasis? No-one has sent me this game yet, so I still can't help. Are my hints really too subtle? More EDTS next year (That's tomorrow, dears, in case that's still too subtle.)

Right, now onto a letter from someone who's obviously keen to make new friends, as they begin 'I hereby claim the Expert's Arcade Arena to be the most available column in the entire history of Dragon User' (Is right. Who wants predictability? Apart from me, of course. Ed.) Well, thank you for your kind comments. On Edgy, for words which will stay with the forever, amongst the other precious memories of this, the high point of my career. On also makes amends by providing the cheat procedure for Robotix powers around. Mythmaker On, who was actually writing on behalf of the Dragon Computer Club (the Scandinavian user group, and he's to thank you over there in Norway.

Role-ball Cheat

Press the 'W' key during play. The code is DESTINY.

By the way, if anyone managed to miss MacGowan Consultants' advert for Monster Mine in the September DA, then goback and cast your eyes over it. I'm sure for a welcome change, in fact I wish I could send them a prize for plain, cold honesty. Maybe this could start a craze among advertisers and we'll see them fighting each other by criticising their own products - and why not, it worked for British Rail and Mafex (Who???) (PS, how about a copy, Mac?)

Well, it seems that that's just about all there's room for in the mag for this month (Can you see any blank pages?) (Don't say so!) (Hing!) This is ongoing tale ...), so I'll better say Cheerio sooner or later (and believe me, I'll sooner if it was later than sooner). Finally, however, let me tell you that you'd better read next month's column because teams of volunteers, even as I speak, are counting your votes in the software survey and if the round-the-clock schedule goes according to plan, then the results should be ready for me to go public next month. May the Good Lord help you sleep between now and then. Bye and Merry Christmas.

Communication

Problem: Wanted, Dragon's Clue and Snap-Cameras.
Name: T. Glosman
Address: 16 Epping Drive,
Sale, Cheshire M33 5LR

Adventure: Bedlam (Radio Shack)
Problem: Can only get green key and recover from latently.
Name: Kevin Barnett
Address: c/o B&N, Dunstable
Airedale, Verke, Bedford.

Problem: I lost my instructions for Dragon Composer and I can't operate it properly. Can anyone help?
Name: Colin Diskin
Address: 2 Greenbank Road,
Gillingham, Kent, Gillingham SE13 9BZ

Problem: Wanted, Elite-Calc spreadsheet, also Dynastat compiler. Both for DragonDOS.
Name: T C Hanson.
Address: Tel: 0273-584664.

Communications

Write down your problem on the coupon below, make it as brief and legible as possible, together with your name and address and send it to: Communication, 48 Alexandra Road, Hounslow, Middlesex TW3 4HP

Problem:
.....
.....
.....
Name:
Address:
.....
.....

Write: ADVENTURE

Pete Gernand slips naturally into a role

NEXT door's hellhound seems to have survived the postal strike, judging by the phenomenal amount of noise it was making only the other day. The cause of this noise is not known, although I note with some trepidation that there is a large pile of scaffolding outside the nearby public house, while so workmen have been seen for ten days. Mind you, precious little can be seen at all today, it is ideal role playing weather.

There is a liberal coating of frost covering everything, it is extremely misty, thus rendering the cemetery the other side of the road invisible, and it is very, very cold. Cemetery? Yes, peasants, a cemetery. Distinctly spooky it can seem at times as well, like on dark frosty nights when a low mist covers the ground and only the tops of the gravestones can be made out in the eerie half-light. Someone once remarked that next door's hellhound was barking "hi to raise the dead". I sincerely hope that it doesn't!

In last month's issue I gave a brief introduction to role playing games, but there are many other aspects of this fascinating trend in adventure that have still to be looked at. Quite a few traditional adventures have had characters in them, or 'pets' to give them an official name, but these characters are to be found in abundance in role playing games, and just as early adventures all tried to beat each other by having three initial locations, so modern RPGs are wandering along a similar road by trying to cram in as many characters as possible into a single game.

I notice K. Harber's new adventure, *The Curse of Gernand*, is strong on characters, and includes such delights as an elf, a half-orc, and a half-elf. Over one hundred locations as well, which can't be bad, and text only to boot. Now this would be a good person for me to role play, and push the dear old Dragon even closer to the limits.

Role playing games

Characters in RPGs can usually be divided up into good or bad. The good ones will, at the very worst, ignore you, but otherwise will undoubtedly help you to varying degrees. Since most RPGs are, at the moment anyway, merely slight variations on the tradition *Dungeons and Dragons* theme, something that will come back to later, the good guys are almost invariably along the lines of wizards and elves. The bad guys will, at the very best, only put up a ten day fight, but others will be doing their utmost to destroy either you or members of your party. Again the *Dungeons and Dragons* theme is strongly prevalent, and the usual assortment of once and foralls

remp around with other, never, upstairs.

Bartering is usually to be found somewhere along the way, and the status of the character that you're bartering with, whether they be good or bad, will determine everything. Not least of these will be to see if they can be bothered to deal with you in the first place. They might instead push you away and ignore you, but eventually you'll get round to doing a spot of bartering with someone at some time.

Careful with goats

There's an important rule to obey when bartering in an RPG: never be ridiculous. That is, if an object costs, say, 500 goats, don't go offering 10 for it. The character that you're dealing with might be highly unsuspicious, and at your rank bad manners produce a most clever from somewhere and effectively end the game. You might be lucky and escape with a warning, but then it will probably take you many moons before you're allowed to attempt to barter again. Always try something reasonable, like 400 goats, and take it from there. You'll probably end up paying around 450 for whatever the item might be, and a saving of 50 goats on the original price can't be bad. To per cent off, well worth bartering.

Another rule applies just as much in RPGs as it does in adventures: always save your position before trying anything dangerous, or foolish. Items and favours usually add up in an RPG, and there you might be offered all sorts of delights to tempt your palate. Food and drink are usually there in one form or another, but it's probably safer drinking water. I've played one RPG where if you try and have too much strong alcohol you get drunk and cannot perform anything effectively. Reasonable enough, you might assume, but in this particular game it was not only the character who got drunk, so did the computer! At first I was convinced that the blessed thing had crashed, but as the character gradually recovered from the effects of intoxication so did the computer. An interesting experience.

This getting drunk in taverns isn't just one area where RPGs score over traditional adventures, because there seems to be a much closer link with reality. You get a more vivid impression of actually being there because your character gets hungry and thirsty, or tired, and needs to find food and water and possibly a bed for the night. I know that some adventures have tried to do this, but it never seems to work in the middle of an adventure game when you're trying to puzzle out how to get across a yarning chasm. There is less concentration on problem solving in RPGs, or so it seems to me anyway, and more effort is

spent on convincing the player that they really are there, trying to work out how much money they've got and whether they can afford an expensive single room or a cheaper communal one and thus run the risk of being stolen in the night.

That is not to say that problems don't exist, because they most certainly do, and in great quantities as well. It is just that the problems are, generally speaking, of a different nature from the standard "insert yellow card in slot and pull lever" variety beloved of the adventure game writer. The problem of a room for the night, for instance, as mentioned in the previous paragraph. Checking in at the wrong place could be a potential disaster, although it is something that can be done rather than a problem that prevents you from getting any further on in the game until it is solved. Therein, methinks, lies another great virtue of RPGs: there's always something to envisage doing, you can always have a room around and see what lies beyond the next corner, you're not stuck in front of a yarning chasm without a clue as to how to get across.

Time marches on

RPGs often tend to play themselves as well. That is, if left to their own devices and the player doesn't press any keys and initiate any actions, the characters within the game will meander around of their own accord. Time will pass, and various events dependent on time will also happen. Time will open and close, and if you fail to get a bed for the night and have to sleep out in the open then that's your look-out. Once again, the sort of thing has been tried in more traditional adventures, although it seems more convenient to me that time marches merrily on while you're STILL working out how to get across that yarning chasm.

But here we come back to what I think is the one major problem facing RPGs as presently, and it was a situation that early adventure games went through and to some extent are still facing themselves. Just as early adventures seemed to be nothing but copies of the original *Cotillion Cave* (and I was as guilty as anyone else when writing them) so nowadays so many of the more popular RPGs all look remarkably the same. They're not the same game, you're not in front of the same situations all the time, but there is a clear resemblance from one to the other. All the comments made so far about bartering, good guys and bad guys, taverns and inns, could apply to any one of the hundred RPGs, and it is to be hoped that someone (you?) with a bit of ingenuity can manage to break out of the mould and come up with something completely different. We might look at a few ideas next time around, but

first, the poets.

Our beloved editor hath spoken, and foolish be the man who ignores her word. So, from next month onwards, there won't be two separate columns as there is to the moment, but instead there'll be one big column. This makes sense, because there is often a cross-over from one to the other,

items that appear in the *Adventure Trail* could equally as well appear here, or vice versa, so from next month it'll all be lumped together but probably still called the *Adventure Trail*. Now here's where you come in. If there's anything you'd like to see in this new section, please write and let me know and I'll do my best to incorporate the

cleaner, wittier, better suggestions. What you get will thus, to a large extent, depend on what you want, so please put pen to paper or finger to keyboard and drop us a line. Oh yes, and if you've any suggestions for ingenious ways of quietly disposing of bathhouse, then I'd love to hear them. Until next month then.



I seem to have stirred up something of a Dragon's Lair with my comments in the September issue of *Dragon* User when suggesting the setting up of a nationwide Dragon adventure swap-shop. I received an extremely pleasant (and extremely long) letter from our old friend Jim Foley in Romford on the very topic: letter written on 2nd September 1988, answered personally as soon as possible, but only now reaching the glorious pages of our (and I must stress the OUR, meaning all of us) magazine. Such are deadlines, the bane of any editor's life, and any editor who can exclude in one of her letters the amazing comment "we can take some of our newly acquired snails and introduce them to the Welsh marches" can only be admired for putting up with these things.

Swapping or piracy?

But back to Jim's letter on the subject of swapping adventure tapes: it's good to see someone else putting Romford Brewery advertisements in their place, let me tell you. The company who put the ball in John's court, whatever it takes nothing like best. A minor digression, the topic of swapping tapes and "piracy" is, by all vintage standards, an awkward one. I don't agree with piracy any more than Jim does, I would never copy a tape or disk with the express purpose of making money for myself. I never have done and I hope I never will. On the other hand, if someone sends or gives me a piece of software that they have no other use for, then I will use it. If they have also kept a copy for themselves, on the premise that they might one day want to look at it again for whatever reason, then that is their business.

However, the crux of the matter lies with the vexed question of are we robbing people of money by copying and swapping games that are on the market and readily available through retail order schemes, and

that by doing so are we then making potential new suppliers of Dragon software think twice about coming into the world of the Dragon? Let us, in the honourable British tradition, arrive at a compromise. If an adventure game that was once produced by a thriving company exists beyond the commercial life of that company and becomes impossible to obtain, then we can assume that unless the author decides otherwise we are free to make backup copies and swap them amongst our friends. Such a program, along with programs that are put into the world of public domain software, will then more become available to the Dragon community if that program is subsequently re-marketed by another, existing, company, then it no longer becomes one that can be swapped in the aforementioned manner.

To sum up, then, if a program is no longer being marketed in any way, shape or form, then we can make it available to all members of the Dragon community. If at any time it is either being marketed, or someone else takes up the marketing of it, then we can't. Sounds simple enough to me, and I trust that Jim and others will approve. So, if anyone has any Dragon adventures that are not being marketed, not being sold anywhere, and they would wish to share those adventures with other Dragon users, let us know. If I or anyone else subsequently discover that the game is being marketed, the boys will be around to do unspeakable things. Failing that, Helen and her snails (assuming they survive the Welsh marches) will transform your life into a nightmare.

Classics

By the 'eck, that were all real serious, happen. But it is a serious topic, so thanks to Jim and his letter I hope we've managed to get everything sorted out to their satisfaction

of all concerned. And now, back to Dragon adventures, and two classics.

Yes, just two for the rest of this column. Readers with exceptionally keen eyesight will have noticed a map attached somewhere near this column, but we shall come back to that later. To begin with, a friendly letter from Andrew Melli (and a quick hello to another letter from Peter Hawes, the 10-year old adventure genius in September of 1987 who is now the 18-year old adventure star of 1989 — hello there!) concerning the game *The Final Mission*.

The Final Mission

Now beware, ever vigilant readers, because what you are about to get is the COMPLETE SOLUTION, as some famous television or other might have said it. Yes indeed, the 100% fix is what the final message reads solution. Minor drawback, you have to cheat. BUT, the game is written in Basic and so that makes matters simpler. I shall quote Andrew's letter to you:

"About two months ago (four new postal strikes still operative at the time — PG.) I wrote to Incentive Software and asked for a solution sheet to *The Final Mission*. I received a solution sheet and thought it would be easy to complete. WRONG! For some reason there is no alarm, and you need to drop the atom bomb to kill the spider. I have searched everywhere for this alarm but have had no success. About two days ago (months now — PG.) I found out that the *Final* adventures are indeed Basic. This is what you have to do:

Load the program as normal, when the computer goes 'ok!' signalling that it has finished loading the program and is now loading the data) react it, then type the following:

0 GOTO 9999

You then must EDIT 4210, press K and

delete our "GOTO 3000". All you have to do then is type RUN. The solution follows:

This is Andrew's full solution now, so read as far as you need to (or dare) because I am not typing all this lot out backwards in the time-honoured fashion; it would take forever! (If then is someone going to come up with a program that automatically transposes any quantity of copy into reverse? Jd.)

Not backwards!

(?) Get chair, examine chair, east, drop chair, stand on chair, break glass, east.

(?) North, get string, west, south, drop ring, east.

(?) East, west, east, west, west, south, get garlic, west, south, west, south, get crowsbar, west, south, get soap, north, east, north, east, north, east, north, east (foot should open in pocket).

(?) Down, east, south, south, black pag, north, north, east, remove panel, east, north, drop garlic, north, east, get aerosol, west, south, east, west, south, south, west, west, up, wait, west, west, wait, wait (you should hear splintering sound), drop soap, down, north, north, north, west, west, south, south, south.

(?) Unlock door, drop key, south, kill monk (or escape), south, south, south, say "anagram", west, say "gar", east, south, get pendant, insert edgar, insert pendant, south, west, north, north, east, east, east.

say "S&P", south, south, south, get carrying, west, south, south, west (this is where you should drop the coin), share aerosol, spray aerosol, down, south.

Use crowsbar, drop crowsbar, north, east, down, down, and raise man, get handle, up, up, south, south, get raties, insert aerosol, south, south, show carving (make sure you are wearing the pendant with edgar in it), south (the pendant will launch the demon back to hell), insert handle, south ... THE END!

Andrew tells me that if you save or load the game you will not receive the full 100% and you will not get the final part of the secret message, however, having completed all three Kai adventures the secret message is EE (aargghhhhh!) — sound of Andrew's voice being flushed up).

Solution sheets

Last bit of news from Andrew is that he has prepared an A4 booklet with hint sheets and solutions to *The Greenwood Incident*, *Intercoast*, *Syrrise*, *Alphastar 477*, *Demondrings*, *Loathn Space Mountains of Kax*, *Temple of Ulan*, *The Return of the King* (and more). This costs £1, including postage, and can be obtained from Andrew Multivide at 109 Main Street, Little Harwood, Near Wellingborough, Northants, NN16 5SL. Good on you, me boy!

Meanwhile, back at the map, *Total Eclipse* (Universe 52) you will note, another

Dragon User Exclusive (I hope), brought us your courtesy of another *Dragon* statement, none less than Jon Pickard. I think he must spend his entire life playing this game. Anyway, he has mapped galaxy one of universes 60 of *Total Eclipse*, and a million blessings on him for doing so. (The map has suffered a bit in the post, so bits of it are not perfectly legible, but we'll have a go at reproducing it, and if that doesn't work, we'll try again sometime. Gd.) Saving a position is possible, reloading is not, which is a minor problem, since you can only stand back in amazement at the perseverance that this map has. As if producing this map were not enough, Jon offers help to anyone still stuck in Universe 01, and to quote "all they have to do is seed an S&E and no money."

Wishful thinking

After all, this is a game & not a business transaction — Goodwin, Jon lives at 73 Amhurst Road, Hammersmith, London, W6 7JH. Those who don't know, he tells me that Multivision have a Motorola Company, who make the things that produce the *Dragon Professional* one day (wishful thinking there!), he says that lots of his friends would like to see the PC Convert working, and he wishes a Happy Christmas and Happy New Year to me and all. What more can I add? Have a fine '88 everybody, and let's keep the *Dragon* Motorcycle (?) along over the next twelve months.

Letters

This is your chance to air your views — send your tips, compliments and complaints to Letters
49 Alexandra Road, Hounslow, Middlesex TW2 8AP

Wordwrap workout

CONSIDERABLE time must have been spent by people writing test adventures or screen instructions for programs to ensure that words do not wrap round to the next line if

As this? Often, when I think I have it right, I find when the program is RUN that I am out by one character and the program has to be re-coded.

The following program segment and sub-routine will take care of the problem. I offer it in the hope that it may be useful to other *Dragon* users.

```
100 FOR A = 1 TO B
110 READ A$
120 GOTO B000
130 NEXT A
140 DATA xxxxxx, xxxxx (etc.)
2000 REM --- WRAP-ROUND
SUBROUTINE
3000 Y = INTN(1.45 * Y)
3010 B$ = LEFT$(A$,Y)
3020 IF LEN(B$) = B THEN
```

```
3030 IF LEN(B$) = B THEN
3040 B$ = LEFT$(B$,B)
3050 IF POS(B$) = B THEN
3060 A$ = A$ + B$(LEN(A$)+1)
3070 IF A$ = "" THEN
3080 A$ = " "
3090 IF A$ = "" THEN
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4720 IF POS(B$) = B THEN
4730 IF POS(B$) = B THEN
4740 IF POS(B$) = B THEN
4750 IF POS(B$) = B THEN
4760 IF POS(B$) = B THEN
4770 IF POS(B$) = B THEN
4780 IF POS(B$) = B THEN
4790 IF POS(B$) = B THEN
4800 IF POS(B$) = B THEN
4810 IF POS(B$) = B THEN
4820 IF POS(B$) = B THEN
4830 IF POS(B$) = B THEN
4840 IF POS(B$) = B THEN
4850 IF POS(B$) = B THEN
4860 IF POS(B$) = B THEN
487
```

Cereal data

Gordon Lee unearths some startling factorials!

ON this page in the past we have made reference to 'confusing' competitions. By that I mean those competitions, frequently found on the packets of breakfast cereals, in which it is necessary to arrange a list of desirable features (usually relating either to the price on offer or the correlation in the order decided upon by a panel of judges). To be certain of landing in a winning line, how many attempts would you need to make?

Let's assume that there are only four features on the list. We would need four attempts to be sure of placing the first choice. This would leave three options remaining for second place, so we would need three more attempts to be certain of correctly placing

```
00 01
02 03
04 05
06 07
08 09
10 11
12 13
14 15
16 17
18 19
20 21
22 23
24 25
26 27
28 29
30 31
32 33
34 35
36 37
38 39
40 41
42 43
44 45
46 47
48 49
50 51
52 53
54 55
56 57
58 59
60 61
62 63
64 65
66 67
68 69
70 71
72 73
74 75
76 77
78 79
80 81
82 83
84 85
86 87
88 89
90 91
92 93
94 95
96 97
98 99
```

The 2481 digits in factorial 244

the first two features. Proceeding in this way, it is clear that all four would need a $3 \times 2 \times 1$, or 24 attempts. This value is known as 'factorial' 4 and is written 4! - the exclamation mark being the symbol for factorials. A list of some of the lower factorials is given in table 1. Note that 0! is factorial 1. There is no logical reason for this, as 0! is a meaningless quantity, but by convention it is given the value of unity and by so doing many formulae using factorials can be simplified. However, this is a subject which needn't concern us here.

Returning to our cereal competition, the organisers are seldom generous enough to list only four features. A more

usual number would be 8. Reference to the table tells us that we would need to submit 40320 entries to be certain of getting that winning line. If the number was increased to 10 (as was the case with a recent national competition) over 3.6 million entries would be needed - and they even asked for a 'factorial'! (The exclamation mark at the end of the last sentence was, in this case, not intended as a fractional symbol.) Clearly, it can be seen that as the factorials increase they get really large. For example, 52! - the number of different ways that a pack of cards can be arranged - is a 68-digit number. Look up factorial 52 in a book of mathematical tables and you will generally

Price

WELL, there we are, saved from plunging the depths (and we do mean depths) of the Major Rottenside file by John Pester of **Savage Software**, who wrote today to say that, having promised us five copies of the greatly lauded **Mandragora**, he realised he could manage another five. And we didn't even have to break his arms. Come to think of it, just as well we didn't, or he wouldn't have been able to write, would he? The amateur-infested arcade challenge has been pronounced the best game of 1988 by many, and is a generous contribution from a software company in its early days.

Rules

When you have installed the 'fantastic' competition, posted into an envelope marked **JANUARY COMPETITION** with your answer, typing and any comments you care to add, and send it to us at Alexandra Road, no cresses, please, unless they

contain rare recordings of Les Zapelin. Then wait for the crunch to come.

Taking of crunches, what about the 'factorial'? Ah yes! Using your skill and judgement, place five things you like about **Dragon User** in order of importance. Think carefully before answering this. You may enter as many times as you like.

October winners

We allowed a certain amount of flexibility in the final solution, as many entries came up with slightly different answers by perfectly fair means. However, it wasn't difficult to pick out the most confident calculations.

The winners are: E.A. Newman of Addisons with a particularly far-reaching set of comments, S.A. Siddiqui of Chiswick, D.J. Gray of Middleborough, Patricia Hill of Clapham Beaches, P.D. Maddocks of Taplow, Peter Duncombe of Harpenden, Paul Woodson of Wotton-under-Edge, Fred Wilson of Hamfield and last but not least, Auzan Henderson of Bromsgrove, who

beat several other entries of comparable brilliance on the strength of his 'factorial'. There you are - they even work down to 10th place. (The last does not necessarily appear in order of success, but the battle for 10th place was definitely joined here.)

Auzan's 'factorial' involves taking 'factorial football' because it doesn't make him out of breath. We had a few this month ... I like indoor football better than outdoor football because the trainer doesn't use a really cold sponge for fear of spoiling the carpet ... because outdoors it doesn't make him feel the teaming I'm playing the most gifted rugby players in the country ... because getting muddy is a Drag on my social life ... because it's difficult to plug a Dragon in an outdoor football pitch (good one, that. Fundamentally true on all counts) ... because I won't have to go in Gwyneth to win my Spots ... and so on. All good stuff.

Solution

See opposite.

find the value given as 8.6881 (35). (The number in brackets meaning that the decimal point needs to be moved 61 places to the right to obtain a value of the correct magnitude. Of course, this will not be the true value accurate to the last digit, but it will be sufficiently close for most practical purposes.

The calculation of such high factorials is generally restricted to the researchers of the numerologist. However, a number of oddities have been found which relate to factorials. In 1876 a Frenchman, H. Brocard, noted that 4!, 5! and 7!, when increased by 1, became perfect squares. Using the methods of calculation then available to was unable to find others with this property, and so he conjectured that these were the only ones. Now, a century on, computers have taken the calculation of factorials far beyond any that Brocard would have considered possible - still

without finding any more to add to the list. The value of P is interesting in that it has a square number of digits and can thus be printed in square formation. Other factorials with a square number of digits are the factorials of 10, 18, 30, 54 and 81. Of all values under 1000, there are just 20 that can be printed in this way, the highest of them being 944! which has 2401 digits. For numerically curious, this value is given here.

Another problem relating to factorials involves finding numbers in which the factorials of each individual digit adds up to the number itself. Apart from the trivial solutions of 1 and 2 there are just two possible numbers. One of these is 145, since $1! + 4! + 5!$ also equals 145. I will leave it to interested readers to calculate the other value (using a short computer program if necessary). However, there is a slight catch which has already been attached to on this page!

ed to on this page!

This month's competition also involves factorials. Examination of the list of factorials in **table 1** reveals some oddities. Notice how the number of zeros at the end of each value gradually increases. These are cumulative and will increase without limit. For instance, the value of 944! shown here ends in 233 zeros. Not so predictable, and hence more curious, are the repetitions within the factorials of other digits. Note the run of four consecutive 2s in 22! and the four 8s in 87! Other factorials with four repeating digits are 351, 384, 451 and 581. Even more unusual is the factorial of 151 which has six consecutive 5s amongst its 265 digits. Now what else would like to know is the smallest factorial with seven digits all alike, and can you say what this digit is? Remember we are not considering any zeros (even if they occur away from the right-hand end of the value).

The Answer

This is Gordon Lee's own solution to the December competition see page 44 for results

THE Wallis and Leibniz formulae do not compute the fourth digit of pi until the 81st and 240th steps respectively.

Using the listing to generate Wallis' series, the approximations for the first few values for pi are given as:

```
4
2.85699687
3.55555556
2.84444444
3.73333333
2.82671429
3.54387347
2.82754250
3.52239356
3.52274866
```

From this it can be seen that the first digit - the 3 - is not computed definitely until the 81st step. That is, after the ninth step 8 remains as 3 and does not revert back to 2.

The listing given uses a subroutine which looks at the computed value of pi and compares the digit being tested with

```
5: IF B=7 GOTO 14: IF B=9 GOTO 14: IF B=1
10: A=2: B=1: H=2: G=0
20: Z=2: A=
30: 868881: 1000
40: H=3681/3
50: IF A/Z<=INT (A/Z)+.01 THEN G=H+2: B1=B: B=H+2
60: B=H+1
70: GOTO 20
1000: Z=B+3681: Z1=Z+H+3681: ZB1=Z1
1010: U=1/WE: H=H+Z1: Z1=Z1: 1: 1
1020: V=WE: H=H+Z1: Z1=Z1: 1: 1
1030: IF H<V OR H<Z1 THEN G=U+GOTO 1040
1040: PRINT U1: " "Z1-1
1050: H=1+3681: IF G=2 THEN G=3
1060: RETURN
```

the actual value of the digit at that position in pi itself. Once the required digit has appeared in two consecutive assessments, the relevant values are printed out. The same routine can be used on both of the formulae as follows:

Add line 5 which defines the extra

variables.

Amend line 36 to read 36=3681: 1000
Add the subroutine (lines 1000 to 1060)

This is shown with the Wallis listing. Unlike the program it is exactly the same for the Leibniz formula.

Classified

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Classified under: Dragon User,
Please cut out and send this form to: Classified Department,
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Chip swap

Graham Smith provides 'Eprom Switching' in a DeltaDOS cartridge

THOSE of you with a DeltaDOS cartridge may have noticed that you have a spare socket sitting next to your DOS eprom. You may know that Premier produced a couple of utility Eproms to fit the memory area \$0000-\$FFFF which is vacant above the DOS rom. The circuit layout is designed to enable one eprom socket when memory is accessed between \$0000 and \$FFFF, and the other eprom socket when memory is accessed between \$0000 to \$FFFF. This of course means that you can't swap the DOS chip and the Bioscode9 chip around because the data contained there would find itself located in the wrong memory area. The important pin is the OUTPUT ENABLE (pin 20) on the 2964 Eprom (in fact pin 20 also is CHIPENABLE but on both sockets pin 20 is strapped to pin 23).

Now, the point of this article is to explain how you can modify the circuitry so that the spare socket can be used to hold an alternative DOS (such as DOSplusDETA), which would normally be a direct replacement for the existing DeltaDOS eprom and therefore expects to find itself in the socket tied to memory location \$0000 to \$FFFF. If you simply place it in the spare socket, it cannot function because it is the wrong memory area, however with an aid of a suitable switch, a few wires and a couple of cuts in the printed circuit, you can switch the sockets over. The advantage of this is that you can have both eproms permanently installed, eliminating the chances of damaging them when you need to change from one to the other. The disadvantage is the fact that you will lose the option to have the Bioscode9 or Bioscode chip fitted. You should also bear in mind that you should not attempt to swap with the power on.

If you are confident of your soldering technique and are determined to have a go, then read on. Remember to read the following instructions carefully as you will have to cut some tracks on the board and solder into the circuitry if you get it wrong. It is your problem, I do not guarantee anything here. The principle is very simple, all you are doing is to install a switch which will toggle the OUTPUT ENABLE signal between the two sockets. You will need a double pole change-over switch, (I used a small sliding switch from Maplin), and four short lengths of wire (about 18 inches each should be enough). I suggest you use four different colours so you can keep track.

Before you start, decide where you are going to mount the switch on the cartridge case and ensure that it will not foul any of the components and that you will be able to get the cartridge back together. Also make sure that you can still insert the cartridge in the DOS connecting socket in place. Make sure that the lengths of wire that you are going to use, will reach from where they are to be terminated, to the final location of the switch. These may seem obvious, but if you forget them, you will be sorry.

First, find chip IC3. There is a small indentation at one end to indicate the top. If you look at the chip so that the indentation is at the top, pin 1 is the top left, pin 7 is the bottom left, pin 16 is the bottom right, pin 14 is the top right. In other words, the pins number anti-clockwise around the chip. Caution around carefully to pin 11 (this should be the middle pin on the right hand side). You will see a printed circuit track leaving the base of this pin, (note pin 11). Cut this track. Be very careful not to cut any of the other tracks near it. I made two cuts close together across the track and scraped the track from between them (less than a millimetre). Remember the track is only on the surface of the board, you don't have to go in deep.

Second, find those little holes marked LK20A,B,C and trace the track leaving LK2 A. Follow the track and you will find that it eventually ends on LK2 C. Cut this track just outside the white box surrounding the LK2 holes (note LK2 holes).

Third, there may be a wire link between LK2 B' and C'. If there is, remove it (unsolder it). Fit a wire link between LK2 A and B'.

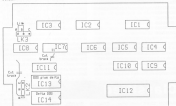
Fourth, let's define the connects on your switch. It should have six terminals (legs), in rows of three. Let's call one side 1, 2, 3 and the other side 4, 5, 6 counting anti-clockwise. You now have some wires to solder.

1. Connect switch leg 1 to switch leg 4
2. Connect switch leg 3 to switch leg 6
3. Connect switch leg 1 to LK2 B'
4. Connect switch leg 3 to IC3 pin 20
5. Connect switch leg 2 to LK2 C'
6. Connect switch leg 6 to IC7 pin 11

Now read through these steps again and see if you did it right.

Finally, insert your alternative DOS chip in the spare socket. Put the cartridge back together and connect to the drive head. Insert the cartridge and power up. Depending on which way you left the switch, you will either get the DeltaDOS screen or your alternative DOS screen. Power off, slide the switch to the other position, power on and hopefully you should get the other DOS screen. The first time I read this modification, nothing would work. The problem was simply the fact that the switch was faulty, and nothing to do with the modifications, but it did give me a nasty few moments. I had actually purchased three switches because they were cheap and on testing I found that only one was reliable. Obviously the moral is, you get what you pay for.

If the idea of an alternative DOS for your Delta cartridge catches your imagination, I will just add that DOSplusDETA is the only alternative DOS I have heard of for Delta users. It is available from me at Orange Software or from Phil Scott direct.



Delta DOS cartridge layout

